



# **NAVAL POSTGRADUATE SCHOOL**

**MONTEREY, CALIFORNIA**

## **THESIS**

**AN ANALYSIS OF THE USE OF MEDICAL  
APPLICATIONS REQUIRED FOR COMPLEX  
HUMANITARIAN DISASTERS OR EMERGENCIES  
VIA HASTILY FORMED NETWORKS (HFN) IN THE  
FIELD**

by

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September 2005

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**AN ANALYSIS OF THE USE OF MEDICAL APPLICATIONS REQUIRED FOR  
COMPLEX HUMANITARIAN DISASTERS AND EMERGENCIES VIA  
HASTILY FORMED NETWORKS (HFN) IN THE FIELD**

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## **ABSTRACT**

This thesis analyzes the feasibility, efficacy and usability of medical operations working in concert with a Fly-Away-Kit (FLAK) and the forming of Hastily Formed Networks (HFNs) in support of Humanitarian Assistance and Disaster Relief (HA/DR) operations. The initial focus of this research is on the requirements, situation, area of operations, and mission differences between nongovernmental organizations and governmental organizations. The thesis researches and discusses the possibilities for implementing medical technology in the field and the conditions and scenarios in HA/DR that may affect its success. This process will also define the requirements for medical operations as well as facilitate a methodology for ensuring those requirements are met. This thesis investigates the suitability of currently available COTS hardware and software components for medical operations. In addition, it includes a comprehensive review of the value of electronic medical records and telemedicine technologies.

Virtually all organizations responding to the December 26, 2004 Southeast Asia tsunami did not have the benefit of large scale medical information technology. For example, the ability to ascertain the real extent of injuries due to the tsunami was hampered by the lack of a central database. Initial media reports claimed a death toll of over 300,000 people, when in fact hindsight now provides a more accurate tally of just over 200,000 dead. This disparity resulted from an archaic system of tracking and accounting. Undoubtedly, humanitarian medical organizations will greatly benefit from the implementation of medical information technology capabilities. This thesis lays the groundwork for further research into medical technologies that can be deployed in the field with humanitarian medical teams in the near future.

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## LIST OF ABBREVIATIONS

Annual Loss Expectancy	ALE
American National Standards Institute	ANSI
Annualized Rate of Occurrence	ARO
Battlefield Medical Information System – Tactical	BMIS-T
Centers for Disease Control	CDC
Computer Emergency Response Team	CERT
Composite Healthcare System	CHCS
College of Healthcare Information Management Executives	CHIME
Confidentiality, Integrity, and Availability	CIA
Chief Information Officer	CIO
Center for Information Technology Leadership	CITL
Center for Medicare and Medicaid Services	CMS
Complex Humanitarian Disaster	CHD
Complex Humanitarian Emergency	CHE
Communications Zone	COMMZ
Continental United States	CONUS
Disclosure, 2) Alteration, or 3) Destruction	DAD
Disaster Assistance Response Team	DART
U.S. Department of Health and Human Services	DHHS
Digital Imaging and Communications	DICOM
Department of Defense	DoD
U.S. Department of Justice	DOJ
Digital Subscriber Line	DSL
Electronic Mail	E-MAIL
Electronic Medical Record	EMR
European Standard	EN
Electronic Protected Health Information	EPHI
European Union	EU
Foreign Humanitarian Assistance	FHA
Federal Information Processing Standards	FIPS
FlyFly-Away-Kit	FLAK
Global Index	GI
Humanitarian Assistance	HA
Humanitarian Assistance and Disaster Relief	HA/DR
Hastily Formed Networks	HFN
Health Information Portability and Accountability Act	HIPAA
Health Level Seven	HL7

Information Technology	IT
Megabyte	MB
Medical Evacuations	MEDEVAC
magnetic resonance imaging	MRI
Medical Support Unit	MSU
National Aeronautics and Space Administration	NASA
Network Address Translation	NAT
non-governmental organizations	NGO
Outside Continental United States	OCNUS
USAID's Office of Foreign Disaster Assistance	OFDA
Peer to Peer	P2P
Public Switch Telephone Network	PSTN
Satellite Communications	SATCOM
Single Loss Expectancy	SLE
Sockets Layer	SSL
Space Technology Applied to Rural Papago Advanced Health Care	STARPAHC
The Telemedicine and Advanced Technology Research Center	TATRC
United Nations	UN
Universal Serial Bus	USB
Voice-over-IP	VOIP
Virtual Private Networks	VPN
Wireless Access 802.11x	WIFI
Extensible Markup Language	XML

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# **I. INTRODUCTION**

## **A. BACKGROUND**

The events of September 11, 2001 and December 26, 2004 truly changed the world we live in. The September 11<sup>th</sup> attacks bore witness to the worst of human kind, but the actions that followed the December 26<sup>th</sup> tsunami demonstrated some of the finer qualities of the human race. Medical expertise is not equally available throughout the world, and even in a medically advanced country like the United States, disasters can quickly overwhelm medical assets, requiring days to weeks to get care to those that need it. Developing protocols and networks to deal with such disasters is vital. Offering medical services remotely using telecommunication equipment is becoming widely accepted and is a possible solution for the above problems.

This thesis examines medical technologies that can be deployed with the Fly-Away-Kit (FLAK) created by NPS student Capt D. Lancaster to support the creation of Hastily Formed Networks (HFN) in remote areas in support of Complex Humanitarian Disasters (CHD) and Complex Humanitarian Emergencies (CHE) (see chapter seven). The initial discussion focuses on the current technologies available in conventional medical settings. Different scenarios emerge when those technologies are taken from the air-conditioned office of the Information Technology (IT) professional to the beaches of Thailand. It is the author's intention to identify those differences and discuss possible solutions to further justify the need for the FLAK in medical operations. This process will also attempt to define shortfalls in legislation, equipment and issues relating to varying climates.

A significant portion of this thesis will be devoted to the discussion of the value of electronic medical records and telemedicine technologies. As non-governmental organizations (NGO) and government organizations (GO) are forced to work with one another, clashes between these two unique cultures may be inevitable. Building an understanding between these organizations is almost as important as the service they provide. One can only hope that the events of September 11<sup>th</sup> and December 26<sup>th</sup> will never be repeated, but the lessons learned from those events and the building of cooperation between NGOs and GOs will dramatically improve communications,

organizations, and relationships for responses to future natural or man-made CHD's and CHE's. "A complex humanitarian disaster is defined the Red Cross and the Red Crescent as "a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering".<sup>1</sup> The term Complex Humanitarian Emergencies "has come into recent use to mean a crisis in the life support and security that threatens a large civilian population with suffering and death and impose severe constraints upon those who would seek to offer help. At its core is a synergist mix of human disaster and undisciplined conflict – a mix that hamstring and stifles attempts to restore order and safety and then provide, in that order and safety, some semblance of solace to noncombatant men, women and children."<sup>2</sup>

## **B. OBJECTIVES**

Research for this thesis applies directly to analyzing and testing capabilities to integrate a standardized bundle of application software to support medical operations in isolated locations. The goal of this research is to create a methodology to deploy existing and future technologies to isolated areas. This thesis seeks to define criteria for deployment in cooperation with HFN and explore concepts of operations. The end product of this research will serve as a baseline for medical operations in remote locations where medical IT systems had little or no use in the past.

## **C. RESEARCH QUESTIONS**

1. What technology is needed to support current HA/DR operations?
  - a. What resources and technologies do medical service providers require and which are feasible based on cost, operational, technical and other considerations?
2. Identify different scenarios and solutions for this concept. Can lessons learned from NPS's tsunami relief efforts in Thailand be applied globally, or are there location-specific limitations? If so, what are those factors (i.e. political, technical, logistical, economical, climatic, etc.)? What are the requirement differences in these scenarios between classes of users such as DoD, NGOs or other non-government agencies such as the United Nations?

---

<sup>1</sup> What is a Humanitarian Disaster?, <http://www.alertnet.org/thefacts/reliefresources/11060515753.htm>, 8/18/2005

<sup>2</sup> Medicine & Global Survival, [www.ipnw.org/MGS/VN1N3leaningEd.html](http://www.ipnw.org/MGS/VN1N3leaningEd.html), 8/18/2005

3. Who is going to use and maintain the equipment and applications (civilian, military, volunteers or professionals) and the impact on operations as the different users take control? Will there be interoperability and lifecycle issues? How can interoperability problems be avoided?
4. Who is responsible for initial setup and deployment of materials? Make recommendations as to who is responsible.
5. Who will acquire communication solutions such as Satellite Communications (SATCOM)?
  - a. How long from initial request does this take to get operational?
  - b. Where will long term funding be provided?
  - c. What are the implications if funding is not obtained?
  - d. Alternate solutions (if applicable).
6. Security
  - a. Is Health Insurance Portability Accountability Act (HIPAA) applicable to various operations?
    - i. If so, what are some recommendations to satisfy HIPAA?
      1. Technical
      2. Administrative
      3. Physical

#### **D. SCOPE**

The scope of this research will include:

- A discussion of information security
- A discussion of electronic medical records
- Analysis of telemedicine
- A discussion of handheld devices
- A discussion of various connection options

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## II. TRIP REPORT AND LESSONS LEARNED FROM TRIP TO THAILAND, MAY 7 -12, 2005

On December 26, 2004, an earthquake ranging from 9.0 to 9.3 on the Richter scale shook the entire planet for approximately ten minutes and resulted in a massive tsunami that killed over 178,000 people in 11 countries and left another 50,000 missing and assumed dead. The earthquake originated in the Indian Ocean just above the Simeulue Island, 150km off the west coast of the province of Aceh on the island of Sumatra in Indonesia.<sup>3</sup>



Figure 1. Simeulue Island, circled on the map

The result was a tsunami with waves of 100 feet that devastated the shores of Indonesia, Sri Lanka, South India and Thailand as well as several other countries (aka Myanmar, etc, etc). Deaths were recorded as far away as South Africa which is 5,000 miles from Simeulue Island (See Figure 2).<sup>4</sup>

As stated earlier, the death counts due to the tsunami are enormous, but to make matters even worse, relief agencies in the area had begun to warn of the possibility that epidemics could break out due to poor sanitation.

---

<sup>3</sup> Hope, despair 6 months after Asian tsunami. Accessed 8/11/2005 from <http://www.msnbc.msn.com/id/8362436/>.

<sup>4</sup> Hope, despair 6 months after Asian tsunami.



Figure 2. The distance the tsunami traveled

From May 7 – 11, 2005, this author surveyed one of the affected areas, specifically Khao Lak, Thailand. Khao Lak lies in the Takua-Pa district of Phang-Nga province, in the south of Thailand. Phang-Nga is situated on the West Coast facing the Andaman Sea, and located about an hour and a half north by car of Phuket.



Figure 3. Khao Lak, Thailand

Khao Lak itself is a national park area, which had been stunning with rich natural attractions prior to the tsunami. It is also a well-located departure point to Phang-Nga's many points of interest, including the famous Similan Islands and Surin Islands in neighboring Ranong Province.

#### **A. PURPOSE OF THE VISIT**

The main purpose of the NPS visit was to repair or replace damaged gear and reestablish an Internet connection to the Bang Muang refugee camp for tsunami survivors. Time permitting, I was to interview non-governmental organizations working in the area. The trip's other purpose was to also help the author understand the concepts of operations in Thailand and witness some of the problems that still existed after five months of aid. The lessons learned in the three days in the area were priceless in the building of this thesis.

Brian Steckler (Naval Postgraduate School faculty member) joined the global response to the tsunami by "organizing and mobilizing a diverse team of U.S. Military personnel, Royal Thai Armed Forces personnel, private sector companies, and key private citizen volunteers to design, integrate, deploy, and maintain a set of two broadband wireless local area networks (WLANs) in the tsunami-devastated Andaman Sea coastal region of Thailand, including Phuket and its surrounding areas, the resort village of Khao Lak, and the town of Takuapa."<sup>5</sup> These networks provided Internet connectivity to NGOs, IOs, United Nations (UN) personnel and anyone else that was in the vicinity to assist the victims of the disaster. Initially, the NPS team deployed two WLANs (802.11) to two different sites for use. The two sites, located 6 kilometers apart, were connected via an 802.16 link (equipment furnished by Redline Communications). Eventually, one of the sites acquired a broadband satellite communications link providing long-haul capabilities. The two sites mentioned above were the Grave Registration Center and the Morgue which was located at the Wat Yang Yao Buddhist Temple and the nearby Bang Muang Tsunami Survivor Camp in Takuapa. Brian Steckler was able to persuade vendors to "donate equipment and personnel to lend a hand with equipment deployment and integration. The following is a list of the equipment donated:

---

<sup>5</sup> Brian D. Steckler, *Hastily Formed Networks for Humanitarian Assistance/Disaster Relief*: Naval Postgraduate School Response to the Southeast Asia Tsunami

- Redline Communications: 802.16 WiMAX equipment manufacturer from Canada
- Rajant Corporation: 802.11 equipment manufacturer from the USA
- Cisco Corporation: Network router, Voice Over IP equipment manufacturer from the USA
- ZyXEL Communications Corporation: Voice Over IP equipment manufacturer from Taiwan.”<sup>6</sup>

Figure 4 illustrates the network diagram of the setup in Thailand incorporating the equipment listed above.

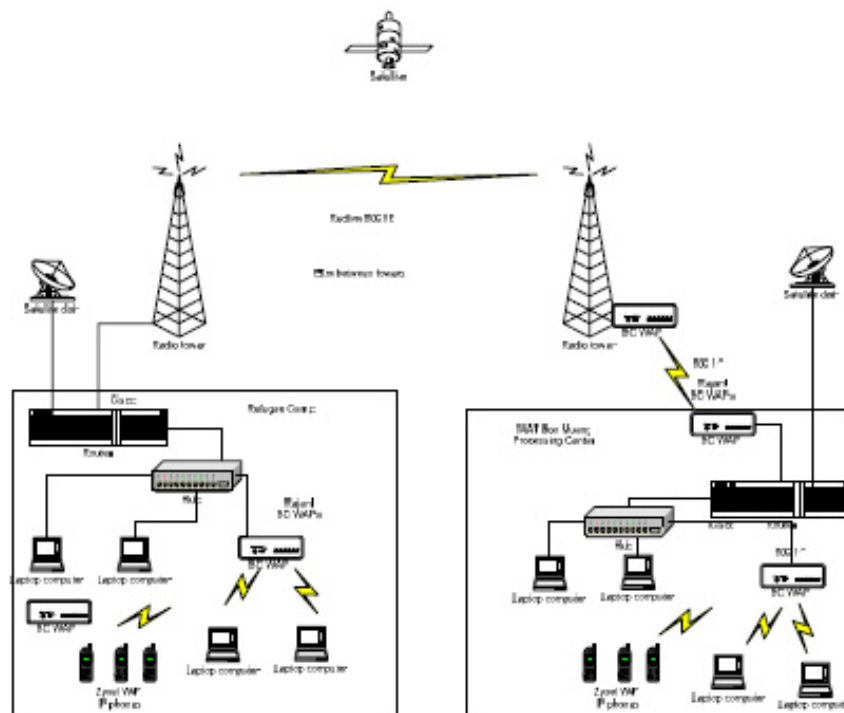


Figure 4. Wireless Network Topology (Wat Yang Yao and Bang Muang Survivor Camp)<sup>7</sup>

My immediate impression of the area was that it was barren. Figures 5 through 7 show how the tsunami transformed one hotel. The rest of the affected areas experienced similar results. Figure 5 depicts a Khao Lak hotel before the tsunami, a beautiful tropical paradise. Figure 7 is a good illustration of how Khao Lak looked during my visit.

---

<sup>6</sup> Brian D. Steckler

7 Brian D. Steckler



Figure 5. Khao Lak before the tsunami



Figure 6. The hotel after the tsunami



Figure 7. The hotel now

Shortly after arriving in Thailand, Brian Steckler and I flew from Bangkok to Phuket where we established lodging. The intention was to make daily drives from

Phuket to Khao Lak. We stopped at a restaurant that is now famous for being the location from which a video of the waves actually hitting the beach at Khao Lak was shot during the tsunami. That tsunami video captured images of beaches full of hundreds of people on the morning of December 26. On this day in May, the beaches were completely empty. When we arrived in the main area of Khao Lak, most of the stores and dive shops were closed; only a camera shop and Internet café were open. The Internet café was charging 1 baht per minute (conversion rate at the time was 39 baht to 1 U.S. Dollar). This price became an important factor later in the trip. The Internet café received its connectivity via a commercial satellite connection. This day was scheduled to allow us to survey the area and to have a chance to see the facilities in which we would be working. This also gave Brian Steckler a chance to set things up for our work the following day. At the end of the first day, it was decided that our operations would be terminated. There were two main factors which led to the move to suspend operations in Khao Lak:

1. The camp staff where the refugees were located told Brian Steckler that they were not really interested in having an Internet Café in the camp and felt the room would be better used as a music room.
2. The local satellite company quoted a price of \$15,000 (U.S.) for a satellite connection and to cancel the connection, required 30 days notice.

After several hours of consideration, Brian Steckler decided to cease operations – remove all wireless Internet access gear that the NPS team had set up in January at the Bang Muang Survivor Camp and the Yang Yeo Bhuddist temple that was serving as the Morgue and Grave Registration Center in Takua-Pa. The following day we would go to the site and remove the equipment. Brian Steckler and I split up. I was responsible for removing our equipment from the “Dentist’s Office,” a dental forensics office that is responsible for using dental records to identify remains. The “Dentist’s Office” site had its own dedicated satellite connection and was willing to share bandwidth with the camp. Initially, NPS had loaned a router to share the network. Now that operations had been terminated, that router needed to be returned to NPS and the “Dentist’s Office” network had to be restored to its original configuration and tested. I accomplished the network reconfiguration and Brian Steckler also finished taking down the rest of the equipment. We completed our work around dusk and headed back to Phuket. Since operations were

complete and there were not many NGOs to speak with, we opted to head back to the States. We departed for Bangkok that morning and the day following I departed for the U.S.

## **B. LESSONS LEARNED**

- Though foreign countries may have good medical systems, individuals from westernized countries may be susceptible to infections to which locals have grown immune. The hotel doctors are used to dealing with foreigners (individuals not from Thailand) instead of the local population and are able to diagnose and treat me because he is used to dealing with foreigners (individuals not from Thailand) instead of the local population. Thorough research should be done to ensure that immunizations are up-to-date and medications are prescribed to deal with common items that are prevalent in the destination country.
- Not all good intentions are well received. It is likely that an Internet café would have helped the residents and staff members of the refugee camp, but they apparently did not perceive or perhaps understand the potential benefits.
- It is obvious that the satellite company engaged in price gouging by raising the price of the satellite connection. How could the Internet Café on the main street in Khao Lak afford to only charge customers 1 baht per minute if it were paying 585,000 baht per month (\$15,000 (U.S.)) for a SATCOM Connection?
- The “Dentist’s Office” computers and network needed serious technical support. I did as much as I could to get the network running, but it was obvious that many of the computers had viruses. A few of the computers crashed while I was assigning IP addresses. A local policeman came into the “Dentist’s Office” to check his e-mail. One wonders how many other individuals do the same thing. The computers needed to be completely wiped clean, formatted and reinstalled. The “Dentist’s Office” computers were also not grounded and I received a shock from the static electricity every time I touched a device. This will eventually take its toll on the lifespan of the devices.
- The climate wreaked havoc on the equipment. One piece of equipment had been struck by lightning and other equipment was flooded by rain (though it was supposed to be waterproof). The heat continually brought some equipment down. If long-term operations were established, an in-country technical support person would be essential to perform repairs immediately.

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### **III. BACKGROUND: HUMANITARIAN AND OPERATIONAL MEDICAL MISSIONS**

It is often in the best interests of the United States and its coalition partners to deploy U.S. forces to provide humanitarian assistance (HA).<sup>8</sup> HA is a tool to not only help those that need it, but to also promote democracy. The U.S. Agency for International Development (USAID) Strategic Plan focuses activities around strategic goals relating to the National Security Strategy. These goals most prominently feature democracy and governance, regional stability and humanitarian assistance.<sup>9</sup> JCS Joint Publication 3-07.6 establishes the Joint Tactics, Techniques, and Procedures (TTP's) for Foreign Humanitarian Assistance. The purpose of foreign humanitarian assistance (FHA) is to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human suffering, disease, or privation that might present a serious threat to life or loss of property.

#### **A. DISASTERS**

As stated earlier, “A complex humanitarian disaster is defined the Red Cross and the Red Crescent as “a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering”.<sup>10</sup> The term Complex Humanitarian Emergencies “has come into recent use to mean a crisis in the life support and security that threatens a large civilian population with suffering and death and impose severe constraints upon those who would seek to offer help. At its core is a synergist mix of human disaster and undisciplined conflict – a mix that hamstring and stifles attempts to restore order and safety and then provide, in that order and safety, some semblance of solace to noncombatant men, women and children.” Man-made and natural disasters are highly destructive. Examples of natural disasters include earthquakes, tsunamis, hurricanes, floods, and famine caused by drought. Man-made disasters involve terrorist attacks, military conflicts and wars and operations other than

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<sup>8</sup> Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance. Joint Publication 3-07.6

<sup>9</sup> USAID Strategic Plan, retrieved from [http://www.usaid.gov/policy/budget/state\\_usaid\\_strat\\_plan.pdf](http://www.usaid.gov/policy/budget/state_usaid_strat_plan.pdf), 8/6/2005

<sup>10</sup> What is a Humanitarian Disaster?

war. The resulting destruction often leads to hunger, disease, lack of potable water, and poor medical care for the displaced population.<sup>11</sup> Figure 1 illustrates National Climatic Data Center reports that between the years of 1980 to 2004, the U.S. has experienced 62 different weather-related disasters. These events have cost over one billion dollars in damages.<sup>12</sup>

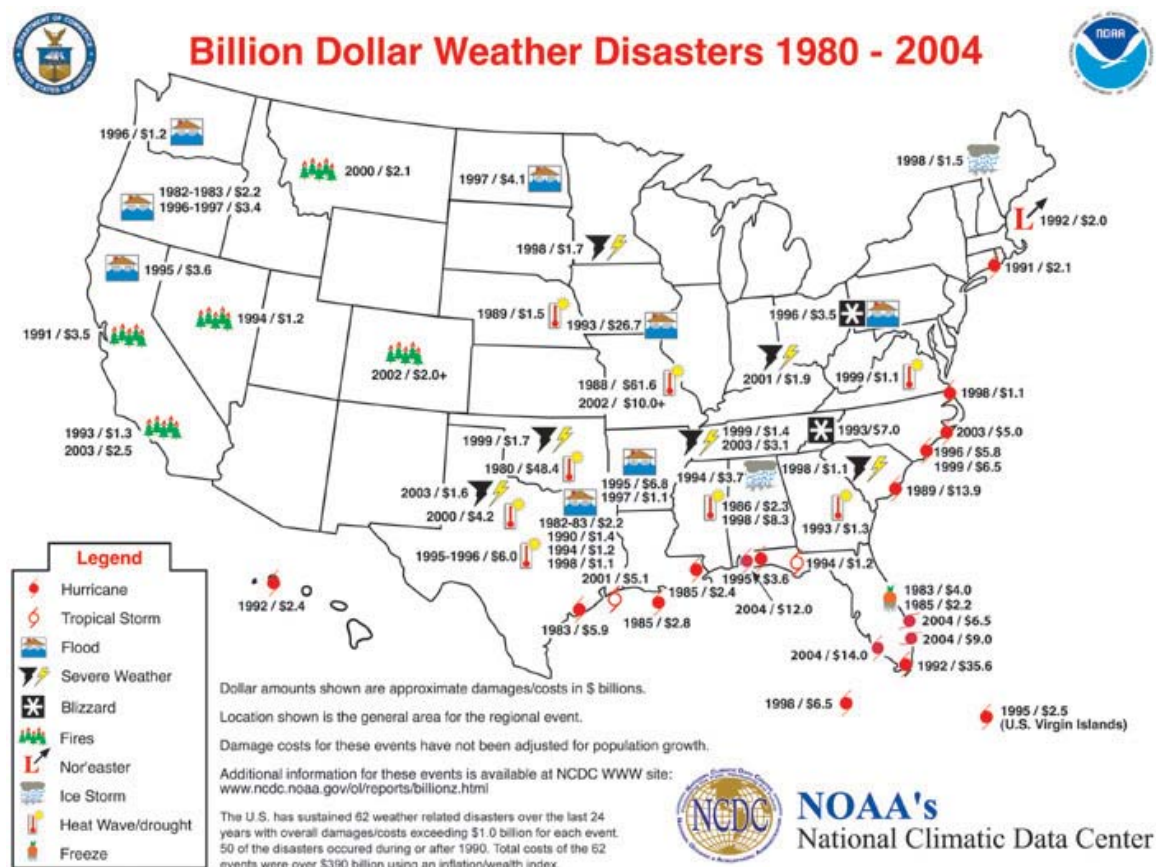


Figure 8. U.S. disasters from 1980 – 2004

In the days since the December 26, 2004 tsunami, disaster relief has become a hot topic in the media. The humanitarian response differs by the event. In Table 1, the short-term effects of disasters and the subsequent population needs are outlined. Whether these numbers are in the thousands, tens of thousands or millions will depend of the extent of the disaster and the population that it strikes.

<sup>11</sup> Andrew S. Natsios, *U.S. Foreign Policy and the Four Horsemen of the Apocalypse: Humanitarian Assistance in Complex Emergencies* (Westport, CT: Praeger, 1997).

<sup>12</sup> Billion Dollar Disasters 1980-2004, retrieved from <http://www.gesource.ac.uk/hazards/billion.html>, 8/6/2005.

Public Health Impact of Selected Disasters					
Effect	Complex emergencies	Earthquakes	High winds (without flooding)	Floods	Flash floods/ tsunamis
Deaths	Many	Many	Few	Few	Many
Severe injuries	Varies	Many	Moderate	Few	Few
Increased risk of communicable diseases	High	Small	Small	Varies	Small
Food scarcity	Common	Rare	Rare	Varies	Common
Major population displacements	Common (may occur in heavily damaged urban areas)	Rare	Rare	Common	Varies

Table 1. Public Health Impact of Selected Disasters

Source: Sphere Handbook

## B. UNITED NATIONS RESPONSE TO DISASTERS

When a large-scale emergency strikes, the various agencies of the UN assess the situation and develop a humanitarian strategy to tackle the emergency. The United Nations and its NGO partners create an inter-agency blueprint that spells out the requirements for each appealing organization to meet their objectives in the affected regions. The UN appeals are not wish lists; they represent real and immediate needs, and usually reflect the bare minimum required.<sup>13</sup> The United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) has 860 staff members and an operating budget of \$110,551,973 (2005). Ten percent (\$11,141,561) of this budget comes from the yearly UN budget and the remainder (over \$99 million) is donated by member states and donor organizations. The following will discuss in greater detail the various levels of medical aid supported by the UN.

### 1. Basic Level

This is in effect basic first aid and preventive medicine. There is no doctor in the area and although care may be provided by a nurse or physician assistant, most likely a trained corpsman or medic provides care using basic medical equipment and supplies. Military medics, corpsman or foreign equivalents are usually enlisted members of the

<sup>13</sup> The Role of the UN and its agencies. Accessed 8/6/2005 from <http://ochaonline2.un.org/businesscontributions/UNRole/tabid/297/Default.aspx#howto>.

U.S. and other armed forces who provide a great degree of flexibility in operational settings because of the nature of their training and the lesser degree of regulation of their civilian counterparts. Medics and corpsmen allow physicians, physician assistants and nurses to focus on more serious casualties and triage, while providing quality care. Table 2 describes the care given at the basic level.

TREATMENT CAPABILITY	TREATMENT CAPACITY	EQUIPMENT REQUIREMENT	REMARKS
<ul style="list-style-type: none"> <li>- First Aid by non-medical personnel or medic/corpsman</li> <li>- Core skills:               <ol style="list-style-type: none"> <li>1. Cardiopulmonary resuscitation</li> <li>2. Hemorrhage control</li> <li>3. Fracture immobilization</li> <li>4. Wound dressing (including burns)</li> <li>5. Casualty transport and evacuation</li> <li>6. Communications and reporting</li> </ol> </li> </ul>		<ul style="list-style-type: none"> <li>- First Aid Kit</li> <li>- Personal field dressing</li> <li>- Pocket mask (optional)</li> </ul>	<ul style="list-style-type: none"> <li>-Troop-contributing country to prepare peacekeeper with the required medical skills</li> <li>-Peacekeeper to be trained in accordance with standards stipulated by MSU</li> </ul>

Table 2. Basic Level Support.

Source: Medical Support Manual for UN Peacekeeping Operations

## 2. Level One Medical Support

This is the first level where a doctor is on site. It provides first-line care, emergency resuscitation, stabilization and evacuation of casualties to a higher level of care. A Level One medical unit is to have adequate medical supplies and consumables for 500 troops for up to 60 days. Care that can be given at Level One is described in Table 3.

## 3. Level Two Medical Support

This is the first level where surgical expertise and facilities are available. The mission of a Level Two medical facility is to provide second-line health care, emergency resuscitation and stabilization, limb- and life-saving surgical interventions, basic dental care and casualty evacuation to the next echelon of care. Level Two care is described in Table 4.

<b>TREATMENT CAPABILITY</b>	<b>TREATMENT CAPACITY</b>	<b>MANPOWER REQUIREMENT</b>	<b>EQUIPMENT REQUIREMENT</b>	<b>INFRA-STRUCTURE</b>
1. Tx of common illnesses 2. Adv life support - airway - ventilation - hemorrhage control - treatment of shock and dehydration 3. Trauma management - fracture immobilization - wound & burns management - infection control-analgesia 4. Minor surgery 5. Casualty evacuation 6. Preventive medicine	- Treatment of 20 ambulatory patients per day - Holding capacity of 5 patients for up to 2 days - Medical supplies & consumables for up to 60 days	2 x Medical Officer 6 x Paramedic/Nurse 3 x Support Staff NB: Capability of splitting into 2 x FMTs, each with 1 doctor and 2-3 paramedics	- Resuscitation and life support equipment, fluids and drugs - Tentages or containers - Building - General support - Field dispensary - Clinic and ward equipment set - Surgical sets - Splints, bandages and stretchers - Portable doctor bags kits - Basic lab kit - Sterilization equipment & refrigerator - 1-2 x Ambulance	- Tentages or containers - Building (if available) - Basic general support and office facilities

Table 3. Level One Support.

Source: Medical Support Manual for UN Peacekeeping Operations

<b>TREATMENT CAPABILITY</b>	<b>TREATMENT CAPACITY</b>	<b>MANPOWER REQUIREMENT</b>	<b>EQUIPMENT REQUIREMENT</b>	<b>INFRA-STRUCTURE</b>
1. Treatment of common medical conditions 2. Triage 3. Advanced life support and intensive care 4. Life and limb-saving surgery under anesthesia 5. Pharmacy 6. Basic dental care 7. Basic laboratory facility - Blood group & cross matching - Hematology - Gram staining - Blood film - Urinalysis 8. Basic diagnostic radiography 9. Hygiene control and preventive medicine 10. Casualty evacuation to Level 3 or 4	- Up to 40 outpatient visits per day - 3 to 4 major surgeries per day - 10 to 20 in-patients for up to 7 days each - 5 to 10 dental treatments per day - 10 x-rays and 20 laboratory tests per day - Medical supplies and consumables for 60 days	2 x Surgeons (general & orthopedic) 1 x Anesthetist 1 x Internist 1 x General Physician 1 x Dentist 1 x Hygiene Officer 1 x Pharmacist 1 x Head Nurse 2 x Intensive care nurses 1 x OT Assistant 10 x Nurses/Paramedic 1 x Radiographer 1 x Laboratory technician 1 x Dental Assistant 2 x Drivers 8 x Support staff Total: 35	- Clinic and ward equipment - Resuscitation room equipment - Standard operating room fixtures and equipment - Intensive care equipment - Field laboratory and radiography facility - Dental chair and equipment - Hospital support equipment, e.g. autoclave, fridge - 2 x Ambulance	1. Hospital - Reception / Admin - Resuscitation room - Outpatient consultation rooms - 1-2 wards - 1-2 bed ICU - Operating room - Pharmacy - X-ray section - Laboratory section - Dental section - Sterilization area 2. Support Services - Kitchen - Laundry - Storage facility - Maintenance facility - Communications - Generator - Office - Sanitation & waste disposal - Accommodation & messing

Table 4. Level Two Support

Source: Medical Support Manual for UN Peacekeeping Operations

TREATMENT CAPABILITY	TREATMENT CAPACITY	MANPOWER REQUIREMENT	EQUIPMENT REQUIREMENT	INFRA-STRUCTURE
All capabilities of Level Two facility. In addition: 1. Specialist consultation services 2. Multi-discipline surgical services 3. Post-operative & intensive care 4. Full laboratory services 5. Diagnostic radiology, ideally with ultrasound & CT-scan 6. Pharmacy 7. Dental surgery and x-ray	- Up to 60 outpatient visits per day - Up to 10 major surgeries per day - Up to 50 inpatients for up to 30 days each - 10-20 dental treatments per day - 20 x-rays and 40 laboratory tests per day - Medical supplies and consumables for 60 days	16 x Doctors - General surgeons - Orthopedic surgeon - Anesthetists - Internists - General physician - Dermatologist - Psychiatrist - Other specialists 1 x Dental Surgeon 1 x Dentist 2 x Dental Asst 1 x Hygiene Officer 1 x Pharmacist 1 x Pharmacist Assistant 50 x Nursing staff - Head nurses - ICU nurses - OR Assistants - Nurses - Paramedics 2 x Radiographer 2 x Lab technician 14 x Support staff Total: 90	As for Level Two facility. In addition: - OR fixtures and equipment for general surgery & orthopedics - Intensive and high-dependency care equipment - Laboratory and radiography equipment - Dental chairs and x-ray - Ambulances - General transport	1. Hospital - Reception/ Admin - Resuscitation room - 4 x Outpatient consultation room - 2-4 x Ward - 4-bed ICU - 2 x Operating room - Pharmacy - X-ray unit - Laboratory unit - Dental surgery (2 chair) - Dental x-ray room - Sterilization room 2. Support Services - Kitchen - Laundry - Storage facility - Maintenance facility - Communications - Generators - Fuel store - Water purification - Sanitation and waste disposal - Accommodation & messing

Table 5. Level Three Support

Source: Medical Support Manual for UN Peacekeeping Operations

### C. U.S. MILITARY MEDICINE'S ECHELON OF CARE

U.S. Military medicine's role during wartime is to support the line commander by conserving fighting strength so that he/she may accomplish the military mission. These objectives are the same when treating casualties in a disaster driven humanitarian mission (CHD). The U.S. Military Medicine's objectives are to:

- Save lives
- Get casualties off the battlefield and into treatment facilities
- Provide modern treatment
- Get service members back to duty as quickly as feasible or evacuate out of the area to a higher echelon of care.
- Make available the largest amount of benefit to the greatest quantity of human resources

To meet these requirements, support in the field is structured into echelons of care:

- **Echelon I.** Echelon I is the first medical care a soldier receives – it is unit-level health care that includes treatment and evacuation from the point of injury or illness to the unit's aid station. This echelon includes immediate

lifesaving measures, combat stress support, casualty collection, and evacuation to supporting medical treatment.

- **Echelon II.** Echelon II is division-level health service support, which includes evacuating patients from the unit-level aid stations and providing initial resuscitative treatment in division-level medical facilities. This echelon includes medical companies, support battalions, medical battalions, and forward surgical teams, as well as intratheater patient evacuation assets.
- **Echelon III.** Echelon III is corps-level health service support, which includes evacuating patients from supported divisional and non-divisional units and providing resuscitative and hospital care. In addition, Echelon III includes providing area health service support within the corps' area to units without organic medical units. Echelon III care is provided by units such as mobile army surgical hospitals (MASH)/Naval Fleet Hospital. Patients unable to survive movement over long distances receive surgical care in an Echelon III hospital.
- **Echelon IV.** Echelon IV is communications zone-level health service support, which includes the receipt of patients evacuated from the corps. This echelon involves treating the casualty in a general hospital and other communications zone (COMMZ)-level facilities. Here, patients receive further treatment to stabilize them for their evacuation to CONUS.
- **Echelon V.** Echelon V is the most definitive care provided to all categories of patients in CONUS and OCONUS military medical facility. Echelon V is the CONUS-sustaining base and is where the ultimate treatment capability for patients from the theater resides, including full rehabilitative care and tertiary-level care.<sup>14</sup>

Since the early 1990's the U.S. military has participated in several humanitarian missions (i.e., Somalia, Bosnia, Kosovo, Cambodia, Haiti, Kuwait, etc). Humanitarian missions rely heavily on the ability to deliver primary medical care to those affected. The military has qualified physicians, nurse practitioners, physician assistants and medics/corpsmen that are ready to deploy on a moment's notice. Though the military is usually one of the first to arrive at the scene of the disaster, military medical units arrive after the emergency phase of the disaster has passed. At this point, there is a substantial need for preventive medicine and primary care. Because of their operational missions and capabilities, the U.S. Armed Forces have the ability to hastily deploy personnel, supplies and equipment to anywhere in the world and can perform adroitly where there is

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<sup>14</sup> Traditional Army Medical Wartime Structure. Accessed 8/6/2005 from <http://www.rand.org/publications/MR/MR773/MR773.chap2.html>.

no existing transportation infrastructure. The organizational structure of the U.S. military allows for satisfactory care far beyond what many foreign or civilian counterparts can offer.

#### **D. NON-GOVERNMENTAL ORGANIZATIONS AND INTERNATIONAL ORGANIZATIONS (NGO)**

The term non-governmental organization, or NGO, was not in use prior to the formation of the United Nations (UN). The first mention of NGO was in UN Article 71, which stated “non-governmental organizations” could have “suitable arrangements for consultation.” Thus, “NGO” became part of UN terminology.

Today many types of organizations are described as NGOs. There is no generally accepted definition of an NGO and the term carries different connotations in different circumstances. Still, most NGOs share certain basic characteristics:

- NGOs must be independent from the direct control of any government
- NGOs will not be constituted as a political party
- NGOs must be a non-profit organization
- NGOs can not be a criminal group
- NGOs must be non-violent

Some of these boundaries are occasionally blurred. Some NGOs are affiliated with a political party or religious group, and various NGOs produce income from revenue generating activities, particularly from the sales of publications, and a small number of NGOs may be allied with violent political protests. Also, individuals and organizations that financially support these organizations put political pressure on them, thus lessening their impartiality. A large portion of financial support comes from governments of wealthy countries that endow the organizations with a large percentage of the NGOs’ budget. Many NGOs are accountable to their donor constituency and headquarters personnel, who establish the NGO’s priorities and fund the programs the NGO undertakes in cooperation with the host country’s government.

One of the common questions about NGOs is whether they are free of government influence. In the past, some governments have tried to influence certain NGOs or the community as a whole. As it applies to humanitarian aid in hostile territories, a perception of such activity could be damaging for the government or NGO.



NGOs increasingly work in disaster areas providing humanitarian relief and medical assistance in countries around the world. Similar to their military counterparts, they face many serious challenges. But even more than their military counterparts, they must contend with government or rebel groups denying them access to those in need, corrupt officials or warlords demanding payoffs or skimming off the top of relief funds, and/or local aggression threatening the well-being and even the lives of their personnel.

USAID's Office of Foreign Disaster Assistance (OFDA) works directly with the host nation government and in concert with UN organizations and NGOs. If warranted, OFDA deploys its Disaster Assistance Response Team (DART), disaster assistance specialists who evaluate the state of affairs and advise the NGOs. NGOs working in a complex emergency may be funded entirely or to some extent by the DART, with the responsibility and accountability that accompanies monetary support. Humanitarian organizations must consider the effects of economic support from a government or other source along with the desire to maintain their autonomy and neutrality. For this reason, some humanitarian organizations do not accept any government subsidy.

#### **E. NGOS AND MILITARY MEDICAL UNITS WORKING TOGETHER**

A perceived problem for NGOs is that military forces increasingly dispense humanitarian assistance, blurring the line between military and humanitarian support and making civilian humanitarian workers potential targets for terrorist groups. In an effort to reduce this view, continue their autonomy and ensure the principles of humanity, impartiality, and neutrality, many NGOs try to avoid contact with, and may act in a hostile manner toward, military personnel that they come in contact with.

If NGOs and military units are to increase cooperation as it relates to humanitarian missions, they must begin to understand one another. The NGO will more easily understand the military culture than the military will understand the NGO culture. This is due primarily to the steadiness and predictability of military culture, whereas the NGO culture constantly changes to adapt to the mission. Even though the military culture has seen its share of changes, their culture (ranks, goal orientated, etc) remains the same. With that said, it is as important for the armed forces to understand the NGOs as it is useful for the NGOs to understand the considerable assets at the disposal of the military that may be beneficial to the NGO. And vice versa. <<and vice versa?>>

When the military is involved in disaster relief activities, military resources are provided mainly to enhance or accompany the relief efforts of the affected country's civil authorities or of the humanitarian relief community. This support may include providing logistics, transportation, airfield management, communications, medical support, distribution of relief commodities, or security. The synergistic environment created by the U.S. military and NGOs can be dynamic. Equipped with greater mutual assets, these organizations can respond to the demand of increasingly numerous and overwhelming complex emergencies around the world. Essential to this synergy is the need for improved appreciation of the cultural climate of each entity.

The March 2003 UN guidelines on the Use of Military and Civilian Defense Assets to Support UN Humanitarian Activities in Complex Emergencies defines humanitarian assistance as "aid to an affected population that seeks, as its primary purpose, to save lives and alleviate suffering of a crisis-affected population. Humanitarian assistance must be provided in accordance with the basic humanitarian principles of humanity, impartiality, and neutrality."<sup>15</sup> Although NGOs vary in organization, funding constituencies, and methods of operation, they generally adhere to the *Code of Conduct of the International Committee of the Red Cross and Red Crescent Movement and NGOs in Disaster Assistance*, adopted in 2001. This code stipulates:

- The humanitarian imperative comes first. The prime motivation of our response to disaster is to alleviate human suffering.
- Aid is given regardless of the race, creed, or nationality of the recipients and without adverse distinction of any kind. Aid priorities are calculated solely on the basis of need.
- Aid will not be used to further a particular political or religious standpoint.
- NGOs shall endeavor not to act as instruments of government foreign policy. In order to protect our independence, NGOs will seek to avoid dependence upon a single funding source.
- NGOs shall respect culture and custom.
- NGOs shall attempt to build disaster response on local capacities. Where possible, NGOs will strengthen these capacities by employing local staff, purchasing local materials, and trading with local companies.

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<sup>15</sup> Guidelines on the Use of Military and Civilian Defense Assets to Support UN Humanitarian Activities in Complex Emergencies, United Nations, March 2003.

- Ways shall be found to involve program beneficiaries in the management of assistance aid. Effective assistance and lasting rehabilitation can best be achieved where the intended beneficiaries are involved in the design, management, and implementation of the assistance program.
- Assistance aid must strive to reduce future vulnerabilities to disaster as well as meeting basic needs.
- NGOs hold themselves accountable to both those they seek to assist and those from whom they accept resources.
- In our information, publicity, and advertising activities, we shall recognize disaster victims as dignified humans, not hopeless objects." <sup>16</sup>

A great asset to the military is the fact that in some cases the NGO personnel have been in country for years, they speak local languages, understand cultural and religious practices, and most of all have earned the people's trust. NGO personnel have assisted in the establishment or strengthening of existing agricultural, education, health, and industrial sectors. When a complex emergency arises, the NGOs usually have some personnel already in country and are able to focus their attention on areas that require aid. An important aspect of the NGO is that they also employ national personnel that are citizens of the country and will remain there even when the NGO and the military have to evacuate. The local population also understands that the NGOs will continue working in the country after the emergency is over and when military units have departed.

The military's primary responsibility is to create and sustain a secure and steady atmosphere, the existence of which is beneficial to the NGO. Once this atmosphere is established, civilian humanitarian personnel can give aid to the affected people. The roles of civilian and military personnel are completely interdependent. However, there remains a perception that NGOs are not completely willing to enter into a coalition with military forces. In this paper, created in collaboration with a variety of international humanitarian NGOs, in addition to and in the framework of the above-mentioned principles, the use of military and civil defense assets (MCDA) shall be guided by the six following standards:

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<sup>16</sup> Code of Conduct for the International Red Cross and Red Crescent Movement and NGO/IOs in Disaster Assistance. Accessed 8/6/2005 from <http://www.icrc.org/web/eng/siteeng0.nsf/iwpList74/56A4E71E11C9189CC1256B6600596BA6#a3>.

- Requests for military assets must be made by the Humanitarian/Resident Coordinator on the ground, not political authorities, and based solely on humanitarian criteria.
- MCDA should be employed by humanitarian agencies as a last resort, i.e., only in the absence of any other available civilian alternative to support urgent humanitarian needs in the time required.
- A humanitarian operation using military assets must retain its civilian nature and character. While military assets will remain under military control, the operation as a whole must remain under the overall authority and control of the responsible humanitarian organization. This does not infer any civilian command and control status over military assets.
- Humanitarian work should be performed by humanitarian organizations. Insofar as military organizations have a role to play in supporting humanitarian work, it should, to the extent possible, not encompass direct assistance, in order to retain a clear distinction between the normal functions and roles of humanitarian and military stakeholders.
- Any use of MCDA should be, at its onset, clearly limited in time and scale and present an exit strategy element that defines clearly how the function it undertakes could, in the future, be undertaken by civilian personnel.
- Countries providing military personnel to support humanitarian operations should ensure that they respect the UN Codes of Conduct and the humanitarian principles.”<sup>17</sup>

It is important to remember the different roles that these organizations play during a humanitarian disaster. The U.S. military is an extension of the U.S. government’s foreign policy. While the NGOs may want to coordinate with the military, they must be very careful they are not perceived as an apparatus of any government. The NGO must maintain the perception that they are in country only to support humanity, impartiality, and neutrality. Adherence to these central ideas is of vital importance to the humanitarian workers on the ground. Although the roles of the humanitarian community and the military must remain distinct, as the response to complex disasters and emergencies increases, the necessity for effective collaboration between the two groups will grow.

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<sup>17</sup> Guidelines on the Use of Military and Civil Defence Assets to Support United Nations Humanitarian Activities in Complex Emergencies, March 2003.

Although there are many differences in the philosophies of these organizations (NGOs and U.S. Military) they are inclined to share three main characteristics: first and foremost, both organizations count human security issues as their top priority; both the U.S. military and the NGOs are highly flexible; and, finally, these two organizations are equally innovative. Host nation, international, bilateral government, NGOs civilian organizations and military forces are essential partners in restoring and maintaining peace following a complex emergency. Until these organizations can work together to facilitate civilians' ability to run their country in a peaceful and reasonably effective manner, the military must remain as peacekeepers or occupation forces. Effective civil-military interdependence is the military's ticket home from Bosnia, Kosovo, Afghanistan, Iraq, and other complex emergencies yet to come.

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## **IV. THE ELECTRONIC MEDICAL RECORD**

### **A. INTRODUCTION**

The use of technology in health care has greatly increased our life expectancy, but unfortunately the medical community has not been eager to use technology to improve their business operations. The CDC's ambulatory medical care surveys, conducted from 2001 to 2003, report that only 31% of hospital emergency departments, 29% of primary care offices, and 17% of small doctors' offices have integrated an EMR into their practice. Most medical offices depend greatly on a paper medical record for lab results, x-ray reading, medical history, etc. In a twenty-minute doctor's visit, the physician not only has to examine the patient and chart the visit, he/she must also enter diagnosis and treatment codes and review past visits for chronic problems.<sup>18</sup>

Many healthcare facilities do employ information management systems (IMS) for financial and some patient care operations, but the systems rarely are networked together and information is not shared. In 2003, the most frequent IT application used in physicians' offices was an electronic billing system and nearly three-fourths (73 percent) of physicians submitted claims electronically.<sup>19</sup> Other hospitals have created their own IMS, but they are not designed to cooperate with other stovepipe systems. This problem can exist even at the departmental level within the hospital itself, the result being that the departments or hospitals cannot communicate with one another. All of the different records find their way to the patient's main record eventually, but not without the concern of loss of documentation and privacy. Many of the statistics above are not really applicable to the support of a humanitarian disaster, but demonstrate the unwillingness or reluctance of the medical community to invest in information technology.

An electronic medical record (EMR) can help a facility realize significant improvements in patient care in both the traditional healthcare setting and in the most

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<sup>18</sup> National Center for Health Statistics, "New Study Shows Limited Use of Electronic Medical Records." Press release, March 15, 2005. Retrieved from <http://www.cdc.gov/nchs/pressroom/2005news/medicalrecords.htm>, 8/2/2005.

<sup>19</sup> National Center for Health Statistics, Use of Computerized Clinical Support Systems in Medical Settings: United States, 2001–03. Advance Data Number 353, March 15, 2005. (PHS) 2005-1250. Retrieved from <http://www.cdc.gov/nchs/data/ad/ad353.pdf>, 8/2/2005.

remote areas of the World. These EMRs have the capability to capture, categorize, and present pertinent clinical information in a manner that far exceeds the capability of a paper record. Additionally, an EMR allows multiple caregivers simultaneous access that will be priceless in the field.

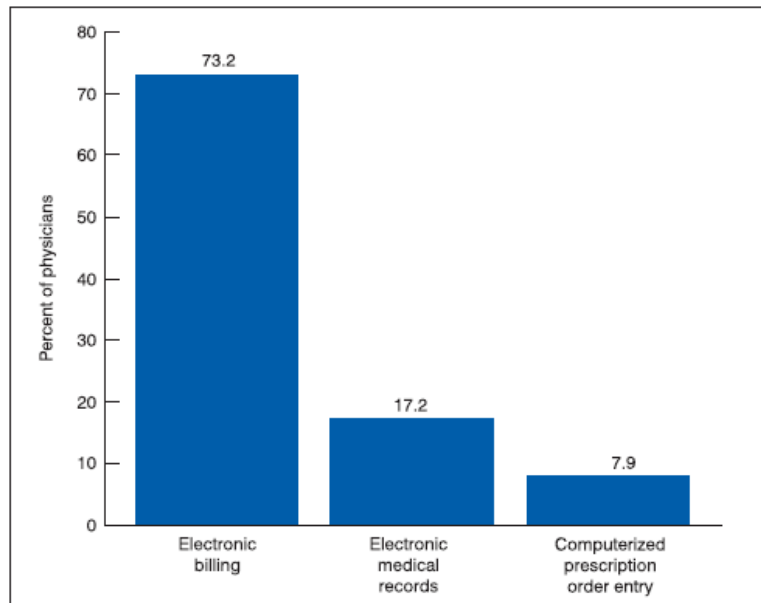


Figure 9. Percent of office-based physicians using selected information technologies

## **B. PROBLEMS WITH PAPER MEDICAL RECORDS**

Paper records cannot become outdated and provide indisputable evidence of care, and have been used in modern medicine for decades. So why now is the paper medical record a detriment to medicine? First-rate medical care for a patient requires a precise and structured record of the patient's medical history. A physician trying to care for the injured after a natural disaster not only has to document the treatment of injuries, but must also take down demographic data and location of the patient for follow-up care; then the doctor must carry each record with him/her and at the end of the day calculate common injuries or disease. An EMR allows the providers to perform queries on the patient's records or on a select population. This would greatly assist in the identification of sanitation problems discussed in the trip report. Up until now, all paperwork was ultimately stored in the paper medical record. Therefore, the paper medical record represented the only complete source of a patient's medical history. Additionally, the



medical records of patients that had been maintained at a facility for many years consist of many large volumes. For the doctor to get a complete picture of the patient's status, he/she would have to review all of those volumes. Furthermore, since so many staff members handle the patient record, it was not uncommon for important information to be misfiled in the record or in the wrong record. Finally, how is a medical humanitarian team going to safeguard medical records in the field and as the population of patients grow, maintenance of the medical records may become a real challenge.

#### **C. THE MEDICAL RECORD AS A SOURCE OF INFORMATION**

The classic paper medical record contains multiple sections of treatment and results and a great deal of the documentation concerning treatment is handwritten in the record by the medical staff. Administrative paperwork (i.e. consent forms, transfusion records, patient instructions, etc) is also stored in the record.

In the traditional healthcare setting, an appointment scheduling is usually performed by a receptionist or entry-level staff members. Each clinic has their own appointment system, thus making it difficult for patients to get appointments during the same visit. Departments create other sets of paperwork that are possibly stored in the patient's record. Patient medical records are usually stored in a vault and behind a locked door, and only staff members are allowed to access if the patient came to the hospital for an outpatient or inpatient visit.

In the operational setting, this function could be used to schedule different villages or towns and collect demographic data about each patient in those areas. Patient records will need to be mobile if the area is geographically spread out or if there are no permanent facilities available for the medical team.

#### **D. ACCESSIBILITY OF THE MEDICAL RECORD**

Every day, physicians, nurses, medical residents, health information management personnel, data managers, and hospital unit coordinators need access to the information in a patient's record. Usually, charts are pulled the evening before for patient visits and returned at the end of the next day. If business operations need that record, they have to wait until it is returned. If the clinic needs the record, but business operations have it, then it could be unavailable for the patient's visit. It is very important that the medical record follows the patient throughout their visit. The medical record tells a story as it

develops; if the story is incomplete, the diagnosis or treatment could be wrong and eventually it could cost the patient his/her life. A disaster like a tsunami or a terrorist attack will also require medical providers to access records simultaneously. It can assist medical providers to identify biological, chemical and nuclear symptoms if weapons of mass destruction have been used. The EMR will also be helpful if there is a disease outbreak in an area that has been affected by a natural disaster which will allow for the quarantine of that area, etc.

#### **E. THE MEDICAL RECORD AS A FORM OF COMMUNICATION**

Doctors communicate about patients through their notes in the medical record. An attending physician can use the chart to review the previous attending physician's notes in order to catch up on the patient's status. Specialty providers (i.e. general surgeons, cardiologists, otolaryngologists, etc.) can give the attending physician the results in the medical record. Nurses on the ward or in an operational setting can review their patients' charts at the beginning of their shift to see if there have been any changes since their last shift. It is obvious that the medical staff relies heavily on the medical record.

#### **F. BENEFITS OF THE ELECTRONIC MEDICAL RECORD**

One of the benefits of an EMR is that information is more accessible. The entire patient's information is a part of the EMR and can be viewed at any computer terminal in the hospital by employees with the proper security clearance. Data mining is increasingly more accurate and efficient due to automation. Eventually, EMRs will not only distribute the correct information, but will also dynamically assist in the treatment of patients through the use of that information. The communication between the providers will also be greatly improved due to the fact that the healthcare providers will be viewing the same information.

#### **G. DISADVANTAGES OF THE ELECTRONIC MEDICAL RECORD**

An EMR is no different than any other networked system. A stand-alone system or a paper record in a vault, behind a locked door with an alarm, is always easier to protect. The would-be thief must physically attack the facility. The chances of getting caught are much greater and loopholes in international law cannot be used. A cyber attack has the benefit of anonymity, and there is even a good chance that the theft could

go undetected. Also, in any electronic system there is a greater chance of data corruption. Due to the amount of people that can simultaneously access the data, careful controls must be put into place to combat this problem.

Additionally, when deploying an EMR to the field there is always going to be concern of its ability to survive in the climate of the area where the team is going to deploy. High moisture areas can cause rusting and dry climates can cause static electricity. Areas in the desert have sand storms and tropical areas have rain storms and very high humidity. Unfortunately, there are not many ideal areas in which to deploy information technology. Though EMRs are lighter and much more portable than a paper based record, the paper record does not require power and can be dried out and still may be of value if it is submerged in water. Finally, if the EMR that is chosen to integrate is not interoperable with business partners or affiliated clinics, the system will have little to no benefit. Health Level Seven (HL7) is an example of a widely accepted standard to ensure interoperability.

## **H. HEALTH LEVEL SEVEN (HL7)**

Health Level Seven is an American National Standards Institute (ANSI) accredited standard. The HL7 standard is widely accepted and employed not only in the U.S. but throughout the world with affiliate groups in Australia, Canada, Finland, Germany, India, The Netherlands, New Zealand, South Africa and the United Kingdom. HL7 is recognized as the most widely used standard among healthcare providers in a 1998 survey of 153 CIOs sponsored by the College of Healthcare Information Management Executives (CHIME). The employment of HL7 has cut costs and facilitated interconnectivity.

### **1. Reduce Time and Effort**

Since HL7's publication and extensive implementation in 1990, the application of the standard has cut interface costs by specifying the importance of events that trigger information flows between systems. Custom-built interfaces prior to the introduction of the HL7 standard cost between \$50,000 and \$250,000. Today, an HL7 interface with similar functionality costs between \$2,000 and \$10,000.<sup>20</sup>

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<sup>20</sup> Health Level Seven, Inc., "What is HL7?" Retrieved from <http://www.hl7.org/>, 8/3/2005.

## **2. How Does HL7 Achieve Interoperability?**

It is the author's belief that the HL7 standard is determined to accomplish:

- Implementation of interoperable EMR systems to exchange patient information needed to deliver superior care as patients move from one setting to another.
- Standards that can be restructured incrementally to lessen both amendments and expenses as EMRs advance to meet shifting functional requirements.
- It is also important that the medical community choose one standard, due to the fact that if various standards exist, vendors will be required to support all of them, thereby increasing costs.<sup>21</sup>

## **3. HL7 Extensible Markup Language (XML)**

HL7 version 3.0 will expand the capabilities of medical information exchange. One of the new aspects in this next version is the evolution of information encoding. HL7 that adds an encoding definition for an application layer protocol for information by using extensible markup language (XML) to explain the grammar or syntax of the language of healthcare and define it with information tags.

## **4. Other Data Standards**

In the computer industry standards for hardware and software have been created so that components of different vendors and systems are compatible. The following is a sample of the major health care standards utilized in telemedicine:

- *HL7 - Standard for sharing clinical data, written by Health Level Seven committee.*
- *E1381/1394 - Standard for exchanging lab data among computers and instruments, written by ASTM E31.14 subcommittee.*
- *P1073 -Medical Interface Bus standard, written by IEEE P1073 committee.*
- *E1460 - Standard for sharing Modular Health Knowledge Bases, written by ASTM E31.15 subcommittee.*
- *DICOM - Image exchange standard, written by American College of Radiology and National Electrical Manufacturer's Association.*
- *E1467 - Standard for exchanging neurophysiologic data, written by ASTM E31.16 subcommittee.*

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<sup>21</sup> Interoperability. Retrieved from <http://www.himssehrva.org/docs/EHRVAExpandedPositionStatementfinal042905.pdf>, 8/3/2005.

- *NCPDP - Pharmaceutical information exchange standard, written by the National Council of Prescription Drug Pharmacies.*
- *X12N - Insurance data exchange standard, written by Insurance Subcommittee of Accredited Standards Committee X12.*<sup>22</sup>

## **I. INTEROPERABILITY**

Deployments of the HL7 or similar standard will ensure the maximum benefit of EMRs and information systems. The Center for Information Technology Leadership (CITL) reinforced this statement in its 2004 report, “The Value of Healthcare Information Exchange and Interoperability.”<sup>23</sup> CITL estimates that the nationwide implementation of technology that provides for interoperability and facilitates the exchange of healthcare information between healthcare providers could result in net savings of \$77.8 billion annually. The objective of interoperability in the healthcare setting is to support the electronic exchange of patient summary information among caregivers and other authorized parties via dissimilar EMRs and other patient care systems to improve the value, well-being, effectiveness, and usefulness of patient care.

When choosing an EMR for a humanitarian mission, the user must be careful not only to choose a product for its ease of use or its functionality as it relates to patient care, but also to choose a system that supports a standard that will facilitate a synergistic environment with all of its partners.

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<sup>22</sup> Sherryl Fisk, Telemedicine lecture notes, University of Illinois, Springfield, November 1997. Retrieved from <http://www.quasar.org/21698/textfodder/Telemedicine.html>, 8/3/2005.

<sup>23</sup> Center for Information Technology Leadership, “Healthcare Information Exchange and Interoperability (HIEI).” Retrieved from [www.citl.org/research/HIEI.htm](http://www.citl.org/research/HIEI.htm), 8/3/2005.

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## **V. INFORMATION SECURITY**

### **A. INTRODUCTION**

Computer and information systems will eventually become an integral part of the healthcare system, used to improve and advance all aspects of patient care. The field of medicine has been slow to adopt such technologies. Health care lags behind the information age, a new study found that fewer than a third of hospitals and only 17 percent of doctors' offices check electronic records prior to treating patients or prescribing medicine and only 8 percent of physicians use a computerized physician order entry system.<sup>24</sup> With that said, the sector has seen some growth during the past decade due in large part to the explosion of the Internet and the acceptance of computers by patients and healthcare employees. As humanitarian organization deploy medical suites, it will be vital to secure that information or the aid workers will not use the technology.

### **B. HEALTH INFORMATION PORTABILITY AND ACCOUNTABILITY ACT (HIPAA)**

The Health Information Portability and Accountability Act of 1996 (HIPAA) (Public Law 104-91) is a U.S. law designed to protect patients' information. The objective of HIPAA is to ensure that healthcare providers secure patients electronic records in the same way that hardcopy records are secured, allowing a healthcare entity to enhance their level of services. Improved security will lead to better implementation of electronic transactions.

HIPAA's primary goal is to restore the patient's confidence that the medical community is able to properly handle (read, file, document, etc.) sensitive medical data. According to the American Medical Informatics Association, "In light of 'modern medical practice' and the growth of third-party insurers, individuals no longer possess a reasonable expectation that their histories will remain completely confidential."<sup>25</sup> In a

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<sup>24</sup> Robert Roy Britt, Hospitals and Doctors Lag Behind Information Age, [http://www.livescience.com/humanbiology/20050315\\_medical\\_info.html](http://www.livescience.com/humanbiology/20050315_medical_info.html), 8/6/2005

<sup>25</sup> Lichtblau, E. (2004, February 11 & 12). Ashcroft defends subpoenas. New York Times.

1993 survey, 80% of respondents believed that consumers had lost control over information about themselves.<sup>26</sup>

HIPAA is regulated by the U.S. Department of Health and Human Services (DHHS) and has vast ramifications for healthcare providers and their affiliate organizations that fail to comply. This applies to every health care institution in the United States (civilian, federal, state, etc). “HIPAA establishes two categories of penalties for entities that misuse personal health information:

(1) Civil penalties. Health plans, providers, and clearinghouses that violate standards will be subject to civil liability of \$100 per incident, up to \$25,000 per person, per year, per standard.

(2) Federal criminal penalties. Health plans, providers, and clearinghouses that knowingly and improperly disclose or obtain information will be subject to criminal liability. This will be up to \$50,000 and one year in prison for disclosing or obtaining protected health information; up to \$100,000 and five years in prison for obtaining protected health information under false pretenses; and up to \$250,000 and 10 years in prison for disclosing or obtaining protected health information with the intent to use it for commercial advantage, personal gain, or malicious harm.”<sup>27</sup>

The HIPAA Privacy compliance deadline was April 14, 2003 and the HIPAA Security compliance deadline was April 21, 2005, although small health plans have until April 21, 2006 to comply.

One key motivation in the creation of HIPAA was the desire of the Center for Medicare and Medicaid Services (CMS) to have all Medicare transactions occur electronically. Before this can take place, the security and privacy of patient records must be assured. However, this was not the only factor driving the enactment of HIPAA due to the increasing use of the Internet and electronic transactions as they related to healthcare. HIPAA’s Privacy section protects consumers from the exploitation of their personal health information.

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<sup>26</sup> Barrows, R. (1996). Privacy, confidentiality, and electronic medical records. *Journal of American Medical Informatics Association*, 3(2), 139-148.

<sup>27</sup> DHHS. Protecting the privacy of patients’ health information: Summary of the final regulation. <http://aspe.hhs.gov/admsimp/final/pvcfact1.htm>, 8/6/2005



The law applies directly to three specific groups commonly referred to as covered entities (CE). These three groups include:

- Health Care Providers who transmit any health information in electronic form in connection with a transaction for which standards requirements have been adopted.
- Health Plans
- Health Care Clearinghouses

There are four parts to HIPAA:

### **1. Electronic Transaction and Code Sets Standards**

The HIPAA Transactions and Code Set Standards standardize the format for electronic transactions between physicians and health plans and other entities. The compliance date for the Transaction and Code Set Standards was October 16, 2003.

### **2. National Identifier Requirements**

National Provider Identifiers (NPIs) are numeric identifiers required for use by all health care providers under HIPAA's Administrative Simplification regulations. NPIs further the goal of standardizing health care transactions between physicians, various payers and clearinghouses. NPIs use will be mandatory on all electronic transactions after May 23, 2007.

### **3. Privacy**

Until the HIPAA privacy rule was established there was no set standard for accessing and handling all protected health information (PHI) in both electronic and paper formats. The manner in which medical information was handled varied greatly and the patient's right to privacy regarding health information was wide-ranging, depending on different state laws. With HIPAA, health care providers, health plans and other health care services that practice in the United States have to abide by the minimum standards. A state can always adopt a law stricter than HIPAA to further secure patients' privacy, but it cannot detract from the basic protection specified in HIPAA. The privacy rule became effective April 14, 2001.

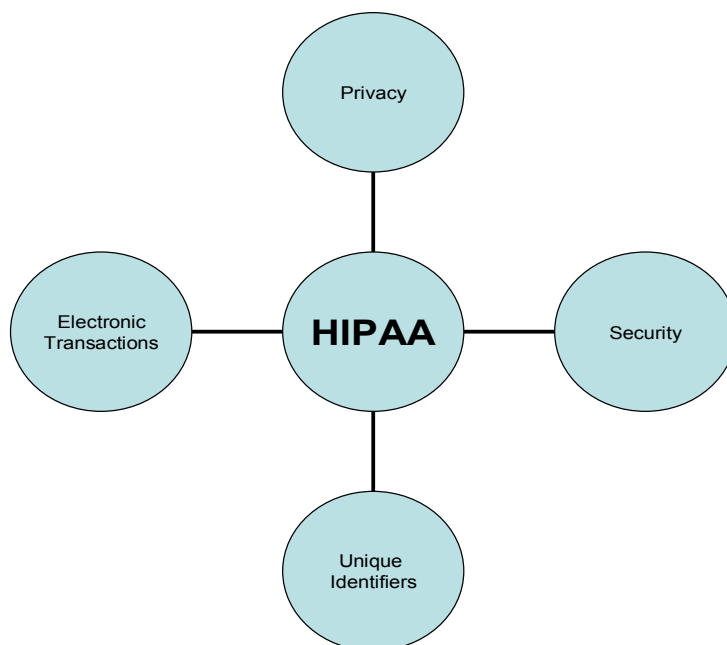


Figure 10. Components of HIPAA

A patient always has access to their medical record. Before HIPAA this was not guaranteed. At the time, only 25 states had laws requiring patients to be able to view and request copies of their medical records. In addition to viewing and copying, HIPAA allows patients with a process to amend their medical records if they feel there is an error.

Every patient that has visited a doctor's office in the past year has been asked to read and sign a notice of privacy practices in relation to how the patient's medical information is used and disclosed. This notice must inform the patient how to apply their rights under the rule. The notice also instructs the patient how to file a complaint with their health care provider and with the DHHS.

A patient's information disclosures must be accounted for in an official log maintained by the hospital records administration. Anyone or any organization that requires access to patient records must be accounted for. A patient can find out who has accessed their health records for up to six years prior. Patients can file a complaint with their health care provider and/or with the DHHS if they believe a health care provider or health plan has violated their privacy.

Under HIPAA, a privacy officer is appointed, all staff are trained, and formal safeguards are created. These new requirements oblige a spotlight on privacy.

Penalties are sanctioned by the HIPAA Privacy Rule. The DHHS may impose a civil fine of up to \$25,000. In the most severe cases, the U.S. Department of Justice (DOJ) may perform a criminal investigation. If the DOJ becomes concerned, violators could receive a jail term of up to 10 years and a fine of up to \$250,000.

#### **4. Security**

The HIPAA Security Rule applies specifically to Electronic Protected Health Information (EPHI). Once again, the primary objective of the Security Rule is to protect the confidentiality, integrity, and availability (CIA) of EPHI when it is stored, maintained, or transmitted. All healthcare providers must preserve sensible and suitable administrative, physical, and technical safeguards to protect the CIA of their EPHI against any reasonably anticipated risks. The final Security Rule became effective as of April 21, 2003.

The Security Rule's requirements are structured into three categories: administrative safeguards, physical safeguards, and technical safeguards. The Security Rule has 36 implementation specifications, which are further divided into two types: required (14) and addressable (22). Required specifications are critical and CEs must implement them. CEs have three choices, however, for handling addressable implementation specifications:

- If a specific addressable implementation specification is determined to be reasonable and appropriate, the CE must implement it.
- If implementing a specific addressable implementation specification is not reasonable and appropriate, but the overall standard cannot be met without an additional security measure, a CE must:
  - a. Document why it would not be reasonable and appropriate to implement the implementation specification; and
  - b. Implement and document the alternative security measure that accomplishes the same purpose as the addressable implementation specification.

If implementing a specific addressable implementation specification is not reasonable and appropriate, but the overall standard can be met without implementation of an alternative security measure, a CE must document:

- a. The decision not to implement the addressable specification;
- b. Why it would not be reasonable and appropriate to implement the implementation specification; and
- c. How the standard is being met.<sup>28</sup>

**a. *Administrative***

Administrative safeguards represent nearly half of the Security Rule's standards. It mandates documented policies and procedures for conducting everyday operations, the behavior and access of employees to EPHI, and the range, expansion, and employment of security controls.

**b. *Physical***

Physical safeguards are a sequence of requirements intended to shelter a practice's EPHI from unlawful physical access. The practice must limit physical access while permitting authorized access.

**c. *Technical***

Technical safeguards are a number of requirements for using technology to defend EPHI, predominantly controlling access.

Although HIPAA has standardized the safeguard of patient information, protecting information is not a new concept. With the growing use of technology within the health care sector, many states and agencies have redefined the policies and practices for collection and dissemination of private information. In the past decade the use of electronic medical records (EMRs) has greatly increased and they are now employed in many practices. Provider networks have been established between affiliated physicians for sharing patient information. These types of scenarios have contributed to a setting that is susceptible to the compromise of patient information.

The responsibility for maintaining a secure electronic health information atmosphere is principally that of health information system security professionals.

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<sup>28</sup> Steven Weil, HIPAA Security Rule, <http://www.securityfocus.com/infocus/1764>.

However, every employee at their respective facility must be familiar with a broad range of electronic security measures to avoid unintended compromise of patient information.

## **5. HIPAA Applicability Outside of the United States**

The DHHS does not have the jurisdiction to enforce the provisions of HIPAA in foreign countries. Moreover, while a foreign business may contractually agree to protect PHI and comply with HIPAA to the same extent as an American company, there is nothing to bind them if they later decide not to comply, especially if that provider is located in another country.

The Europeans have a law somewhat similar to HIPAA, the EU Privacy Directive. Also known as the EU Data Protection Directive (Official Name: Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data<sup>29</sup>), it requires organizations to implement personal data policies to include:

- Transparency: Data must be processed fairly and lawfully.
- Purpose Limitation: Data must be collected and possessed for specified, legitimate purposes and kept no longer than necessary to fulfill the stated purpose.
- Data Quality: Data must be accurate and up-to-date.
- Data Transfers: The data transfers policy restricts authorized users of personal information from transferring that information to third parties without the permission of the individual providing the data, or data subject. In the case of data transfers across national boundaries, the Directive prohibits data transfers outright to any country lacking an “adequate level of protection,” as determined by the EU.
- Special Protection for Sensitive Data: The special protection policy requires restrictions on, and special government scrutiny of, data collection and processing activities of information identifying “racial or ethnic origin, political opinions, religious or philosophical beliefs . . . [or] concerning health or sex life.” Under the Directive, such data collection or processing is generally forbidden outright.

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<sup>29</sup> Fact Sheet on the European Union Privacy Directive by John D. Woodward, Jr., Esq. & Gary Roethenbaugh <http://www.dss.state.ct.us/digital/eupriv.html>.

- Government Authority: Each EU member state must create an independent public authority to supervise personal data protection. The EU will oversee the Directive's implementation and will engage in EU-level review of its provisions.
- Data Controllers: Organizations processing data must appoint a "data controller" responsible for all data processing, who must register with government authorities.
- Individual Redress: A data subject must have the right to access information about himself, correct or block inaccuracies and object to information's use.

Article 1 of the Directive requires member states to protect the "fundamental rights and freedoms of natural persons, and in particular their right to privacy with respect to the processing of personal data." In essence, the EU has made privacy a fundamental human right.

As mentioned earlier, the U.S. has no jurisdiction outside its borders. The concepts of HIPAA can provide humanitarian medical agencies with a roadmap for the safeguarding of patients data. Though there may be some unwillingness by some foreign humanitarian organizations to follow an American Law, it should be strongly encouraged that if HIPAA is not the standard, that some standard should be developed to safeguard patient's information.

### **C. USE OF E-MAIL**

Electronic mail (e-mail) is a communication instrument currently used by hundreds of millions of people worldwide. Some physicians have been communicating with their patients by e-mail for many years. Rightfully so, this element of patient care is being scrutinized. E-mail can complement the patient's experience and greatly improve the patient's access to care. However, as discussed in the HIPAA section above, some of the information within e-mail may require protection.

E-mail is more enduring than oral conversations and often more unstructured than the handwritten word. E-mail can be duplicated or forwarded with the press of a button, and copies can linger on backup computer systems for a very long time. E-mail can also be easily altered and forged. Though e-mail makes conveying detailed patient care instructions easy and does not rely on interpretation, e-mail can include files and/or links to supplementary non-patient information.

E-mail is a dynamic tool that if secured could be used to relay non-medical information, medication, dressing instructions, patient education materials, lab results, appointment reminders, and prescription refills. Physicians could make general announcements to their entire patient population about various issues. E-mail could also allow medical teams that are spread out throughout a region to communicate and share ideas.

E-mail shares all of the same legal and ethical obligations that direct other forms of doctor-patient communication. Physicians who utilize e-mail in their practice must obtain written informed consent from patients before e-mail is employed. There is also the concern that once a physician starts this practice, they will be flooded with e-mails they will not have time to answer, or have less time to see paying patients. Physicians have a duty to provide timely responses to patient inquiries and maintain strict confidentiality and integrity at all times. Physicians need established policies about the types of conversations that they will enter into with patients and manage the expectations of the patient. There must also be a system to make sure that as medical teams rotate out of a country, the patient has the new medical teams e-mail addresses to guarantee continuity of care.

#### **D. THE COST OF SECURITY**

The concept of network security is enormous and there is no one solution that will fit all telemedicine suite needs. Also, the costs of the solution to vulnerability should not be more than the value of the information that is being protected. To establish the amount to spend on a countermeasure, the annual loss expectancy (ALE) must be calculated. To calculate the ALE, the annualized rate of occurrence and the single loss expectancy needs to be identified first.

Historical data can supply information about how often this vulnerability has happened in the past. There are many sources for historical data. For example, to identify how often a neighborhood has burglaries, visit a crime report website or call the police precinct in that neighborhood. To know how many viruses were released last year, go to Carnegie Mellon's CERT website (<http://www.cert.org>). Once the frequency of such events is known within a three month period, six months or year, then the annualized rate of occurrence (ARO) can be determined.

Once the ARO has been calculated, make a comparison to the financial loss connected with an asset. This is calculated by looking at the cost of fixing or replacing the asset. For example, if a server failed, a new server would be purchased and countless hours would be spent building the new server and installing the backup tapes or hiring an outsourcing firm to provide the restoration service. There may also be down time while the new server is being purchased and rebuilt. The monetary loss of the equipment would include the price of new equipment, the hourly wage of the employee building the server, and the cost of employees unable to perform their work. When the dollar value of the down server loss is calculated, this provides total cost of the risk, or the Single Loss Expectancy (SLE). This is one instance of failure.

The next step is to budget for the possibility that the risk will happen. Use the ARO and the SLE to find the annual loss expectancy (ALE).

$$\text{SLE} \times \text{ARO} = \text{ALE}$$

If the probability of server failure is 10%, this would be the ARO (.10) of the risk. Suppose the server was the main server for the site and the site generates about \$100,000 an hour, and it is estimated that the server takes approximately four hours to rebuild. The cost of the new server is \$10,000, thus making the grand total for this event \$410,000. This would be the SLE of the risk. Multiplying the SLE by the ARO, will show the cost annually. The method below provides the ALE for this example:

$$\$410,000 \times .10 = \$41,000$$

This figure would be used to decide if a backup server is needed or if the workload should be distributed over many servers. The costs of those initiatives would be compared to the ALE. This model works whether a humanitarian medical organization is considering backup servers or deployment of a telemedicine suite in the field.

#### **E. FUNDAMENTALS OF NETWORK SECURITY (CIA)**

It is important to discuss some basic security technologies when deciding how to protect a mobile medical practice. Some of those technologies include firewalls, Secure Sockets Layer (SSL) and virtual private networks (VPNs).



Before a mobile medical practice can provide protection from an outside threat, it must first protect itself from the inside. The insider threat is the biggest threat to any network. These are the employees of the company that have user accounts and various levels of trust within the company. It is important to note that the insider threat can cause problems unintentionally or maliciously. They could launch a virus because they are being fired or they can launch a virus because they did not know that the e-mail attachment was a virus. Either way, the network is now infected. Technological solutions can be applied to the network to avert unauthorized access from outside the enterprise, but internal threats also must be recognized. Mazu Networks conducted a survey which was issued to technology professionals from 229 U.S. enterprises, each with more than 1,000 employees. Survey questions focused on attacks that originated directly from within their networks.<sup>30</sup> The survey found that 23% reported an internal security breach by a credentialed person (i.e. employee or contractor with network access). Of those respondents who had internal breaches, 40% said that the breach led to the interruption of a critical business system, 38% said that the breach resulted in data corruption/loss, and 17% claimed that the breach led to intellectual property theft.<sup>31</sup>

Most of the time, the network is compromised by employees who do not have malicious intent. These employees were either careless or uneducated in security awareness. These mistakes are made even by information technology staff, so it is vital to hold, at a minimum, annual training and monthly e-mail reminders for all employees to reinforce the security policies.

Once again, there are three primary elements in securing electronic data:

- 1) Confidentiality - The system contains information that requires protection from unauthorized disclosure.
- 2) Integrity - The system contains information that must be protected from unauthorized, unanticipated, or unintentional modification, including the detection of such activities.
- 3) Availability - The system contains information or provides services that must be available on a timely basis to meet mission requirements or to avoid substantial losses.

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<sup>30</sup> Mazu Insider Threat Report [http://www.mazunetworks.com/news/threat\\_report/](http://www.mazunetworks.com/news/threat_report/)) 8/29/05

<sup>31</sup> Mazu Insider Threat Report

Each of the above elements protect against one of three general types of network attacks:

- 1) Disclosure – Sensitive data being disclosed to the public or individuals not normally authorized to receive it.
- 2) Alteration – Data that is changed or replaced.
- 3) Destruction - Data that has been destroyed.

Firewalls are a solid choice for preventing external attacks on the infrastructure. While firewalls do provide a layer of protection, no single technology should be relied on solely for overall security. To start with, firewalls protect the network from the outside, but do little to counter the insider threat. A firewall is an appliance that is located between the internal network and the Internet (see Figure 9). If configured correctly, it should read the addresses of all communication directed to the internal network and make a decision whether to allow or deny access.

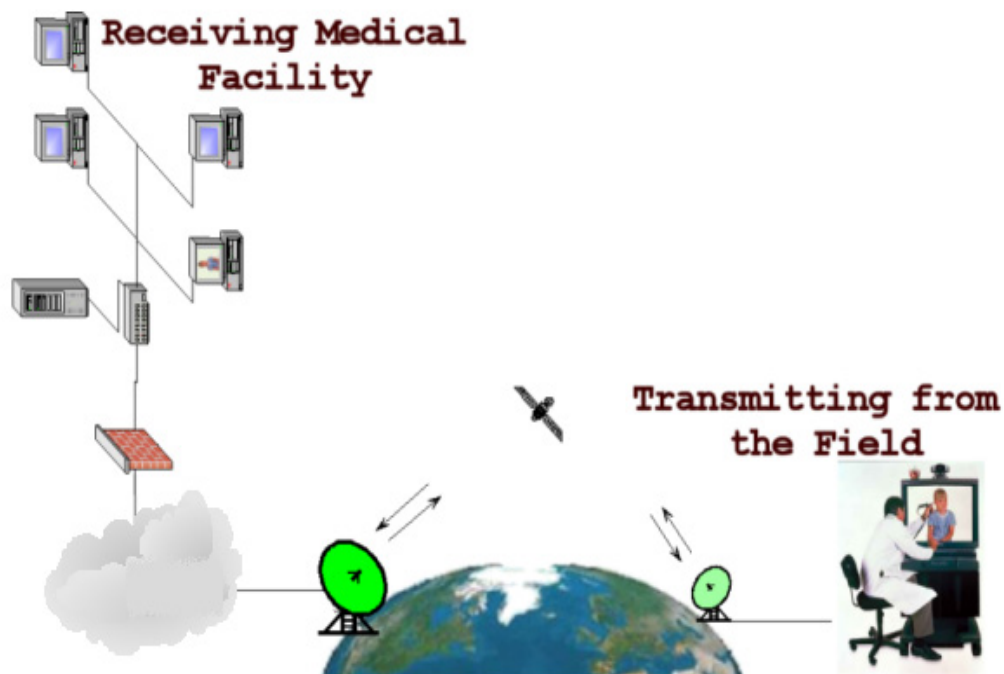


Figure 11. Transmitting and receiving communications

### 1. Virtual Private Networks and Secure Socket Layer

Virtual private networks (VPNs) are a solution that many medical facilities are choosing for secure communications with partners that use the public infrastructure. One of the key elements of VPNs is the encryption of data, so if someone is able to intercept

the data, it will be very difficult to decrypt. Additionally, the VPN connection is protected from detection through tunneling. Figure 10 depicts an example of the VPN setup.

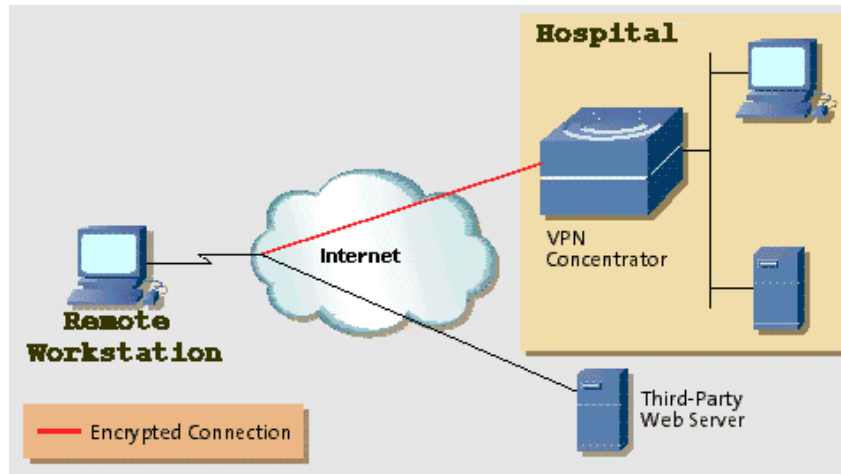


Figure 12. VPN tunneling<sup>32</sup>

An increasing number of vendors are offering VPNs with a Secure Socket Layer (SSL) add-on. For many years, VPN was considered to be a challenger to SSL, but the two are seen as complementary to one another. SSL is a protocol that encrypts and authenticates communication between a server and client. SSL was designed by Netscape and has become the industry standard for protecting communication over the Internet. The main way to know that communications are being conducted via SSL is that the URL starts with the letters “https”. A secure connection is supposed to ensure that the data being exchanged cannot be captured or viewed.

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<sup>32</sup> VPN Split Tunneling Diagram [http://uwadmnweb.uwyo.edu/InfoTech/vpn/images/split\\_tunnel.gif](http://uwadmnweb.uwyo.edu/InfoTech/vpn/images/split_tunnel.gif)  
8/29/05



Figure 13. Secure Socket Layer handshake<sup>33</sup>

Prior to January 2000, SSL was not allowed to be shipped outside of the U.S. with 128-bit encryption due to the fact that any software product that contained strong encryption was classified as munitions by the U.S. As a result, prior to SSL version 3.0, there existed 40- or 56-bit SSL encryption. After January 2000 these restrictions were lifted and now a 128-bit version of SSL is accessible worldwide. 128-bit encryption is about 309 septillion times larger than 40-bits. There is no computer currently in existence that has the computing power to decipher such an encryption. VPNs and SSLs are just two examples of implementations for secure communications over the Internet. A humanitarian organization that is deployed in one country and has a headquarters or some other entity should be employing some mechanism to communicate securely. If the humanitarian organization is deploying a medical team, they must have some way of securing the data.

## F. SECURITY TRAINING

Security training is probably one of the most important elements of information security, yet one of the most ignored. The nonprofit National Cyber Security Alliance conducted a study that found that only 60% of end users knew when they had last updated their computer antivirus program. The study also found that about one-third of users felt they had a greater chance of winning the lottery or being struck by lightning than of being hit by malicious code.<sup>34</sup>

<sup>33</sup> Introduction to Secure Socket Layer, Cisco Systems, [http://www.cisco.com/warp/public/cc/so/neso/cxne/cxdimng/wpsot\\_wp.pdf](http://www.cisco.com/warp/public/cc/so/neso/cxne/cxdimng/wpsot_wp.pdf), 8/29/05

<sup>34</sup> Kathleen Coe, Employee awareness: The missing link. Symantec Corp, <http://www.computerworld.com/printthis/2005/0,4814,101990,00.html>, 8/29/05

Another study conducted by Ernst & Young found more than 70% of the 1,233 organizations surveyed failed to list training and raising employee awareness of information security issues as a top initiative. Even though 93% of businesses have antivirus software in place, 72% of businesses received infected e-mail files during 2004, and roughly two-thirds of large businesses experienced virus infections or denial-of-service attacks last year. And still, less than half of Ernst & Young's respondents provide their employees with ongoing training in security.<sup>35</sup>

Finally, a study by the Meta Group found that 75% of organizations have found that lack of user awareness damages their security programs' effectiveness. Organizations across every industry must take the time to develop a security awareness program.<sup>36</sup> This data begs a question: with security vulnerabilities growing in number each year, why are companies not conducting this simple countermeasure?

A successful security awareness program must be tailored to the needs of each organization. Organizations such as the System Admin Network Security (SANS) Institute have created an online security awareness program, but even a high quality program still requires some customization.

The first step to creating a successful security awareness program is establishing the knowledge level. Some employees may understand packet analysis and some employees may have trouble printing documents. Once the baseline knowledge has been established, it is important to develop a program that will not put the advanced asleep, but will not have the beginners' eyes glazed over.

After the training has been completed, trainers should begin updating for the following year and develop a monthly newsletter or e-mail to reinforce the training and refresh everyone's memory. There is a common saying: "Employees do what you inspect, not what you expect." Employees' vigilance should be measured to ensure that they are practicing what they learned in their training. Finally, as the knowledge level of the employees grows, the level of material that is presented should likewise increase.

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<sup>35</sup> Kathleen Coe

<sup>36</sup> Kathleen Coe

Finally, as discussed earlier, tools like VPN and training must be financially justifiable. If the value of the data is \$100 and a VPN cost \$500, then it is not a smart financial decision. Training is something that can be very expensive or very cheap, but the training must be justified. Sending someone to a \$4,000 course to protect \$100 worth of data does not make sense. Furthermore, a hastily formed network and any medical suite must look at not only these but a plethora of other security tools to include, but not be limited to, antivirus programs, firewalls, anti-spyware, security audits and other mechanisms that can be deployed to ensure that the network is as secure as possible.

## **VI.     TELEMEDICINE**

### **A.     HISTORY**

Telemedicine has long existed and has encountered many changes as medicine and communication devices have evolved. The first and simplest form of telemedicine was the telephone. The first documented use of technology to provide health care at a distance occurred in 1920 at Haukeland Hospital in Norway, where radio links were established to provide health care support services to ships at sea.<sup>37</sup>

The National Aeronautics and Space Administration (NASA) became a major player in the development of telemedicine when it began monitoring astronauts' physiological data from space during missions. NASA also sponsored the Space Technology Applied to Rural Papago Advanced Health Care (STARPAHC) program from 1972 to 1975. This program provided an Indian reservation with medical care. The main delivery of care was through a van supplied with medical equipment. The program eventually ended due to high expenses and technological limitations.<sup>38</sup>

### **B.     WHAT IS TELEMEDICINE?**

Telemedicine is the delivery of conventional medicine where the patient and the provider are geographically separated. This is possible through the use of technology and telecommunications. Another common definition of telemedicine is the art of transmitting medical data electronically from one location to the other.<sup>39</sup> The World Health Organization defines telemedicine as the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interest of advancing the health of individuals and their communities"<sup>40</sup>

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<sup>37</sup> Henry A. Smith & Ronald A. Allison, *Telemental Health: Delivering Mental Health Care at a Distance*, <http://telehealth.hrsa.gov/pubs/mental/home.htm>, 8/3/2005.

<sup>38</sup> Likang Chin, *The Use of Telecommunications in Clinical Medicine*, <http://www.jyi.org/volumes/volume3/issue1/features/chin.html>, 8/3/2005.

<sup>39</sup>Likang Chin

<sup>40</sup> Sandeep Sinha, *Telemedicine, an emerging paradigm for delivering affordable quality healthcare*, <http://www.expresshealthcaremgmt.com/20050315/telemedicine01.shtml>, 8/3/2005.

Clinical information can take many forms. It can be streaming video, still images, scans or electronic patient records, discussion between providers, a combination of any or all of these forms. Transmission of this data can take many forms as well: telephone lines, DSL, cable modem, satellite, and wireless equipment. Transmission media will be discussed in greater detail later in this chapter. Telemedicine has enjoyed a great deal of success in the areas of radiology, pathology, dermatology, oncology, surgery, cardiology, psychiatry, and home health care.<sup>41</sup>

### **C. BENEFITS OF TELEMEDICINE**

The capability to send information over a distance can be utilized for diagnosis and treatment, patient and staff education, and also medical information. Telemedicine is generally carried out through asynchronous or synchronous communication. Synchronous communication offers examinations and discussions that take place in real-time, either between a patient to a provider or from provider to provider. Asynchronous communication offers delivery of images and clinical information, which is viewed and interpreted at a later time.

Telemedicine, as seen in STARPAHC, is motivated by the need for convenient, affordable, and accessible health care services. Additionally, telemedicine now allows modern medicine to reach underserved populations. Telemedicine is a promising way to deliver medical care to large populations with a limited or overwhelmed medical staff. Telemedicine lowers the cost of sending qualified professionals to these remote areas. Some other benefits of telemedicine for humanitarian disasters are:

- Reducing the number of visits by patients to emergency rooms
- Avoiding unnecessary and costly travel and full time employments of specialty providers
- Providing patient education
- Monitoring vital signs, thus reducing the number of staff needed

The uses of telecommunications technology in the delivery of medical care are endless, and can provide considerable savings. The US military, long at the forefront of telemedicine research, supplied data gathered from their EMR, the Composite Healthcare System (CHCS). A group of experts examined the data and determined that 36% of

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<sup>41</sup>Likang Chin



2,156 MEDEVACs could have been treated in their present location using a telemedicine system. The study further stated that this represented annual savings to DoD of approximately four million dollars.

A different panel of medical experts with telemedicine experience reviewed a sample of patient visits collected over a 1-year period and estimated the man-day savings and quality-of-care enhancements if telemedicine technologies are employed.

**Costs:**

- Off-the-shelf telemedicine equipment prices + installation + maintenance + training + communication costs

**Savings:**

- The panel concluded that if telemedicine was used, 19,000 consults in a year – 7% of all patient visits – would have been initiated and 17% of MEDEVACs, at a cost of \$4,400 per MEDEVAC, would have been avoided (155,000 travel miles),

To worsen the circumstances, the companies providing MEDEVAC transportation experienced their deadliest year to date. These deaths are not due to malpractice, but to crashes. The Vietnam era of helicopters airlifting out injured soldiers gave birth to the air-ambulance industry. Air ambulance operations began in the 1970s and have continued to grow ever since. The requirement for MEDEVACS has also increased five percent per year at a price that ranges between \$5,000 to \$10,000 up to \$25,000.<sup>42</sup>

The air ambulance industry is not only drawing criticism over their safety, but there is also speculation there could be efficacy issues of possible overuse. In January 2005, the *Journal of Prehospital Emergency Care* reported that a study of 37,500 helicopter-transported patients determined that two in three had only minor injuries, one in four had injuries too minor to require hospital admission. Additionally, Stanford University trauma surgeon Clayton Shatney conducted a study of 947 patients flown to Santa Clara Valley Medical Center and concluded that the air ambulance service only saved the lives of approximately nine of the 947.<sup>43</sup>

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<sup>42</sup> Safety record of air ambulance industry under scrutiny, <http://www.post-gazette.com/pg/2005063/466365.stm>, 8/4/2005.

<sup>43</sup> Safety record of air ambulance industry under scrutiny.

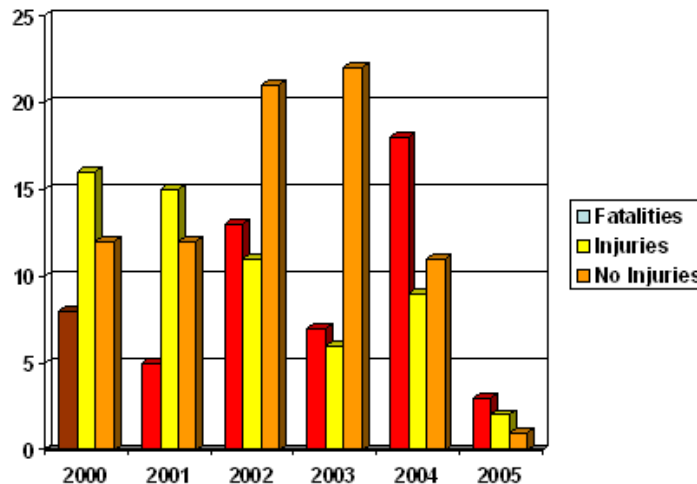


Table 6. Air Ambulance Crash Statistics<sup>44</sup>

#### D. QUALITY OF TELEMEDICINE

Telemedicine has two areas that can be evaluated for quality. To effectively manage telemedicine as a means of delivering medical service, we must understand both:

1. Functional quality, which addresses personnel, technology, physical environment, and customers acting as quality-generating resources in the telemedicine encounter process.
2. Desired clinical encounter results including diagnostic accuracy, diagnostic impact, and therapeutic impact as well as other contributing success factors including patient and direct user (medical staff) satisfaction. Additionally, quality must be compared to the conventional doctor's visit.<sup>45</sup>

A study conducted in 1998 evaluated the utilization of telemedicine between two hospital systems - the University Hospital of Basel (Switzerland) and the University Hospital of Zurich. The quality of transmitted images versus the quality of live images was determined. Located 120 miles apart, the two hospitals were connected via ISDN with a transmission rate of 128-kilobit/s. For two months (May and June), 112 digestive or endocrine surgery patients were evaluated by radiologists and surgeons using both transmitted and live magnetic resonance imaging (MRI) and tomographic scans. Of the transmitted images, 92.9 percent achieved ratings of "good" or "excellent" as compared to 95.5 percent of the live images - a difference of only 2.6 percent. In all scans, whether live

<sup>44</sup> Medevacs mishaps, [http://www.iasa.com.au/folders/Safety\\_Issues/RiskManagement/medevac-helo.html](http://www.iasa.com.au/folders/Safety_Issues/RiskManagement/medevac-helo.html), 8/4/2005.

<sup>45</sup> Cynthia LeRouge, Alan Hevner, Rosann Collins, Telemedicine Encounter Quality: Comparing Patient and Provider Perspectives of a Socio-Technical System, <http://csdl2.computer.org/comp/proceedings/hicss/2004/2056/06/205660149a.pdf>, 8/3/2005.

or transmitted, 100 percent of target organs were distinguishable. However, fine organ structure was visible in only 89.3 percent of the transmitted scans versus 95.5 percent of the live scans. The structures of the organs as well as pathological findings could be examined in 98.2 percent of the transmitted images and 99.1 percent of the live images. Diagnosis could be made from 84.8 percent of the transmitted documents as compared to 93.8 percent of the live documents. The disparity between the percentage in loss of quality (2.6) and the percentage in loss of diagnosis (9.0) indicates that other factors exist when making clinical diagnosis, such as choice of radiological studies, additional clinical information required, etc. The study did confirm the hypothesis that real-time consultation is not necessary to provide patients with accurate diagnoses.<sup>46</sup>

## **E. BARRIERS TO TELEMEDICINE**

The growing popularity of telemedicine has spurred enormous growth. Despite that growth and the benefits of telemedicine, barriers continue to exist. Some of these barriers include licensure, reimbursement and medical malpractice.

### **1. Licensure**

In a humanitarian disaster, the need for professional medical practitioners is enormous, but how does an NGO ensure the individual in front of them has the qualification? The US military has a similar problem. They are a global organization that has employees from all 50 States and from Puerto Rico and Guam. They credential each provider based on the license they have received from their home state. The military provider does not need to get a license for the state in which they are currently assigned to work in a military treatment facility. When they deploy, they deploy under the credential granted by their home base, eliminating the costly process of requiring every provider to get a new license every time they transfer to a new duty station. See Appendix A for a list of sites to verify a US doctor's license.

### **2. Lack of Reimbursement**

Despite the demands of the Health Insurance Portability and Accountability Act and the availability of advanced technology, reimbursement for telemedicine has not yet come to fruition. If organizations cannot bill for telemedicine, the motivation to start such ventures is low. The Centers for Medicare and Medicaid Services (CMS) has authorized telemedicine reimbursement only in Alaska and Hawaii. Reimbursement is

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<sup>46</sup> Likang Chin

\$20 for each patient consult. In 18 states, CMS will pay \$20 per consult for all the live videoconferencing, but many physicians claim they do not have time for live conference. Blue Cross of California has decided to pay for telemedicine, thereby extending care to underserved communities and reducing costs for chronic diseases that often go undiagnosed and uncontrolled.

### **3. Medical Malpractice**

Health care systems must satisfactorily supervise and credential staff providing services under their umbrella. However, it is possible a telemedicine host could have no affiliation with remote physicians and hospitals other than their involvement in the network. Anyone hosting a telemedicine site must ensure that each provider is credentialed. This not only protects the facility, but more importantly protects the patients. This issue becomes even muddier as telemedicine service moves into the international territories. The answer is in a set standard by everyone in the network. Until federal or international laws are created, it is important that a set standard of credentialing providers is established.

### **4. General Barriers**

Telemedicine barriers are not just limited to those mentioned above. Some other barriers are those experienced by every sector and fall under general management when introducing a new concept. The barriers fall into two main categories: technology and non-technology. Usually the technology barriers are more due to fear and can usually be resolved with training. The non-technology barriers are a bit more difficult to resolve due to hidden agendas.

### **5. Non-Technology Barriers**

#### ***a. Inadequate Leadership***

In a humanitarian organization, staff members can be spread all over the world. If there is not a champion on the ground, the project will have little success. The project coordinator should be a central resource with a strong understanding of all details of the project. If the project coordinator role is divided among various staff members, the project could struggle if they do not have a good working relationship.

***b. Lack of Physician Buy-In***

Physicians run the world in a medical environment - without them, the medical facility has no customers. If the physician in the local area does not endorse the project, the project will stall and be at risk for termination.

***c. Technical Support Unavailable***

Unfortunately, it is crucial to have an IT specialist on site to troubleshoot problems that arise with use of the equipment. In a medical humanitarian organization, the level of technical knowledge can vary. Some staff know enough to be dangerous and may attempt to tamper with workstation settings, disrupting access to applications. Other staff members may use the computer(s) to check e-mail and communicate with others back home. This can introduce viruses to the system or otherwise compromise the project. Having an IT staff member that can return workstations to functional status is very valuable.

***d. Interoperability***

Interoperability is important with an EMR, but is also vital with a telemedicine service. If the medical information cannot be shared, then the service is useless. In the EMR section, medical information was discussed, but medical images can also take many forms. To ensure interoperability, the DICOM standard has been created to share medical images.

**F. THE DIGITAL IMAGING AND COMMUNICATIONS IN MEDICINE (DICOM) STANDARD**

This DICOM Standard, which stands for Digital Imaging and Communications, is a global standard that is used in practically all hospitals worldwide. Its structure is designed to facilitate interoperability of medical imaging equipment used to produce, store, display, process, send, retrieve, query or print medical images and derived structured documents as well as to manage related workflow by specifying:

- For network communications, a set of protocols to be followed by devices claiming conformance to the standard.
- The syntax and semantics of commands and associated information which can be exchanged using these protocols.
- For media communication, a set of media storage services to be followed by devices claiming conformance to the standard, as well as a file format

and a medical directory structure to facilitate access to the images and related information stored on interchange media.

- Information that must be supplied with an implementation for which conformance to the standard is claimed.

The DICOM Standard does not specify:

- The implementation details of any features of the standard on a device claiming conformance.
- The overall set of features and functions to be expected from a system implemented by integrating a group of devices each claiming DICOM conformance.
- A testing/validation procedure to assess an implementation's conformance to the standard.
- The DICOM standard pertains to the field of medical informatics. Within that field, it addresses the exchange of digital information between medical imaging equipment and other systems. Because such equipment may interoperate with other medical devices, the scope of this standard needs to overlap with other areas of medical informatics. However, the DICOM standard does not address the breadth of this field.

#### **1. Who Needs DICOM?**

As discussed earlier with the HL7 standard, all hospitals, clinics, imaging centers and specialists need the DICOM standard if they wish to transmit medical images. Investing in equipment that conforms to the DICOM standard ensures interoperability with other clinics and medical facilities. More importantly, DICOM and HL7 have developed information linkages between the two standards. The DICOM Standard is expected to become an ISO reference standard by the end of 2005. It has been a European Standard for years. Wherever possible, DICOM utilizes relevant parts of other mature standards such as JPEG, MPEG and TCP/IP and other Internet standards.

#### **G. SUCCESSFUL TELEMEDICINE DEPLOYMENT**

Successful telemedicine programs are due to vigilant planning, strong management, committed health care professionals and support staff. In an environment that has been struck by a disaster, telemedicine may be the only way to fulfill the mission. The following are some key steps to successfully deploy a telemedicine operation:

##### **1. On-Site Site Manager**

As discussed earlier, the designation of an onsite manager responsible for the operation of each site is important. This individual can have other responsibilities, but

this person is responsible for telemedicine operations. The onsite manager is the liaison to direct patient care and must assure that all operations are conducted smoothly and efficiently. They will ensure that all personnel are adequately trained in the use of telemedicine devices to capture diagnostic quality images, data and sound.

## **2. Services Offered**

It is important to define the scope of the program. Generally, this will involve an analysis of the needs of the area where you will deploy personnel. For example, victims of the tsunami disaster will require a high number of general practice providers on site, but will need to have specialty providers available for consultation. One of the first tasks is to determine the clinical functionality of each site. The functionality of each site is dictated by the specific medical issues to be addressed at the site. Telemedicine applications today exist across almost all medical specialties and a great deal of functionality can be introduced into each site.

Increasingly, medical devices are interoperable, meaning that multiple devices may operate using a single desktop or laptop personal computer. With the increase in interoperability, the functionality of each site can be expanded; often only by purchasing devices intended to achieve the specific functionality.

## **3. Kit Design**

Kits should be designed for deployment. Because of the special electrical, telecommunications and computing requirements of telemedicine, a standardized set of equipment and applications should be employed. If the various kits differ greatly, staff could become confused. Proper allowance must be given to the installation of required cabling in a way that assures access for maintenance and upgrades, while at the same time maximizing patient and user safety. Consideration should be given to work flow and patient activity within the room to avoid hazards which can arise from exposed cabling.

## **4. Site Selection**

Once the team has arrived in country, some aspects of site selection should be considered. Medical devices used in telemedicine will capture images, data and sound and transmit the information electronically. These devices require a power supply, knowledge that the equipment is compatible with the power of that country, or if not that a converter will be required.

Another important consideration is lighting. Telemedicine programs which anticipate live transmission of video images must obtain proper color rendition and image brightness. This may require specific lighting to capture the best images.

Finally, consideration should be given to the location of the room within a facility, the use of the room for non-telemedicine purposes, accessibility to caregivers, and the means of access and egress for patients. Ultimately, the goal is to mainstream telemedicine services into everyday clinical activity. The location of this plays an important role in achieving this goal.

## **5. Identify Affected Specialties**

Based on the mission, the program should identify the medical specialties which are needed. In each of these medical specialties, a clinical liaison should be designated for purposes of managing consults for each specialty. Based on the size of the population being served, this can be one or several individuals. Having more than one professional in each specialty trained in the use of telemedicine systems also facilitates expansion of the program as volumes increase. Additionally, having specialists in several countries is advantageous to avoid gaps in service.

## **H. IMPLEMENTATION**

In many cases, the sheer size and complexity of the organization dictates that it be implemented in stages. In other cases, budgetary constraints may require phased implementation of a program. Whatever the reason, the process of phased implementation of a telemedicine program may dramatically affect its success.

### **1. Phased Implementation**

There are generally two approaches to the phased implementation of a telemedicine program. In one approach, a party will introduce the telecommunications infrastructure and, in the case of live applications, the videoconferencing equipment, at all sites with no implementation of telemedicine devices in the first phase. The goal is to build out the telecommunications infrastructure in one phase, and then add the medical devices intended to be used in the telemedicine program at a later date.

One advantage of this approach is that all telecommunications infrastructure will be implemented in a single phase, which may lessen costs. This approach, however, has several potential disadvantages. After completion of the first phase, only limited clinical



telemedicine may be conducted. A disadvantage of this approach is that when telemedicine devices are fully deployed in a second phase, the result is a finished, but as yet untested, system. In this case, further adjustment and modification of the telemedicine system may be required.

The other approach to phased implementation involves development of a limited number of telemedicine sites, including telemedicine devices, with full functionality in the intended medical applications. These sites then operate to test the business and operational model under live conditions in country. To the extent any modification or adjustment of the program is required to achieve success; those modifications can be accomplished with a minimum of expense and incorporated in the rollout of additional sites. This approach also permits intense training of a limited number of professionals in the use of telemedicine devices and the system. These professionals then serve as mentors and can be divided up to other teams and continue to train other professionals and lowering training costs.

One disadvantage of this approach is a potentially higher cost for telecommunications infrastructure and videoconferencing equipment. A large purchase of equipment can often lower the cost of each unit. Carefully consider the budgetary limitations of the organization, expectations regarding program performance at each phase of implementation, training requirements, and the potential for program modifications occurring after implementation. Careful planning of the program implementation schedule will help minimize expense and maximize the likelihood of success.

## **I. THE ROLE OF NURSES IN TELEMEDICINE**

Receiving and exchanging medical information through wires and tubes is not a new role for nurses. Telephone triage has long been a responsibility of the clinical nurse. The shortage of nurses has been a key motivator in the growth of the telemedicine nurse. There are prisons and school systems that cannot afford to have the nurses they need. Telemedicine has leveled the playing field. A telemedicine home care study in California projected that nurses could see almost four times as many patients a day by computer, and that the average computer consultation lasted just 18 minutes, compared to 45 minutes in person. Nurses' salaries are also a fraction of a physician's salary, yet they

still possess the clinical knowledge to relay vital signs, symptoms and other pertinent physiological information to a physician being consulted at a healthcare facility.

Telemedicine security is not any different from medical record security or general information security, discussed in greater detail in Chapter Four. It is important to note, that for any telemedicine initiative to work, information security must be in the earliest stages of planning and should be one of the highest priorities. Although security regulations for HIPAA do require protection, there will be issues when operating outside the U.S. To be successful, it is also imperative that every person responsible for care understand the risks of security vulnerabilities and the importance of guarding the patient information. There is no technology or policy that can guarantee that a medical practice will be 100% secure.

## VII. EQUIPMENT

The Fly-Away-Kit (FLAK) to support the forming of Hastily Formed Networks (HFNs) developed by Capt Dwayne Lancaster to support of Humanitarian Assistance and Disaster Relief (HA/DR) operations is this author's recommendation as the technology of choice for voice and data requirements. The FLAK (see figure 13) is the compilation of gear that supports "flexible connections between the reach-back solution and the last-mile solution."<sup>47</sup> Ethernet is the current desired interconnectivity with other devices. The FLAK comes equipped with a Tachyon Satellite CPE, Cisco 2811 Router, Redline AN50e, MeshNetworks Intelligent AP which supplies all the essential components and the mobility for travel via commercial airplane.



Figure 14. Fly-Away Kit

In addition to the FLAK, the medical provider will need an EMR either in a hand held device or in a laptop computer. Both technologies have their advantages and disadvantages. Handheld devices' computing power and functionality have come a long way. Smartphones and handhelds can perform the following functions:

- Send and receive e-mail with attachments
- Work Microsoft Word, and Excel files, and PowerPoint files
- Project slide shows directly to LCD projectors
- Surf the Web
- Take handwritten, voice or typed notes.
- If equipped with a camera, they can take pictures
- Include a calendar, alarms, and contact programs for time management
- Almost all IPAQs are now equipped with wireless

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<sup>47</sup> Lancaster, David D., Developing a Fly-Away-Kit (FLAK) to Support Hastily Formed Networks (HFN) for Humanitarian Assistance and Disaster Relief (HA/DR), 6/2005

- Batteries last far longer and take less time to reach a full charge.
- Can be easily carried in a pocket.

#### **A. CASE STUDY: THE ARMY'S SOLUTION**

The problem of providing up-to-the-minute medical information to first responders on the battlefield has always posed significant challenges. U.S. Army battlefield medics are now equipped with a software application developed by the Army and deployed on the HP iPAQ Pocket PC that will assist them in making an informed decision. The Battlefield Medical Information System - Tactical (BMIS-T) is a diagnostic tool that runs on the HP iPAQ Pocket PC. Using a simple point-and-click interface, medics enter information by tapping on the screen with a stylus. BMIS-T users can document clinical information within three to five minutes. Information can be transmitted wirelessly to a central data repository where it can be accessed at Army base medical facilities. If there is no wireless communication available, the information can be stored and sent once a connection is established. By assembling and analyzing data captured on BMIS-T by medics in the field, military commanders can quickly assess potential threats to their troops at the theater level.

Running on Windows Mobile-based Hewlett-Packard iPAQ Pocket PCs, BMIS-T holds service members' complete medical records, including immunization status, dental and ophthalmic records, and known drug allergies. Medical care providers enter information by tapping on the screen and using menus. To simplify input, BMIS-T uses natural language processing to turn stylus taps on anatomical figures on the screen into textual clinical notes. The handheld assistant standardizes how signs, symptoms, and assessment are recorded and helps ensure that the correct treatment course is followed. BMIS-T suggests a diagnosis and treatment plan that is based on the user's skill level. It also provides a full array of healthcare reference manuals. Developed in C++ using embedded Microsoft Visual Studio® 3.0 development system, BMIS-T currently writes XML files into folders, which are stored on the device until the device is synchronized. Upon synchronization, the files are passed up to repository databases, where patient records are stored. To improve performance, future devices will use Microsoft SQL Server™ Compact Edition to store patient records on the device. Devices can be synchronized through a cradle, wirelessly, or through a direct wired connection to the

Internet. BMIS-T also can store updates on a personal information carrier tag (P-tag), a flash memory device issued to some soldiers, with a backup saved to the central database. Data is encrypted by means of a conventional secret-key block encryption algorithm. Congressionally funded, the entire BMIS-T development program for two years cost a mere \$245,000.

More than 1,000 devices have been deployed and TATRC is starting a major acquisition program. This represents one of the first times within the military healthcare system that a technology has made the transition from research and development into an acquisition program. The White House medical staff uses BMIS-T for the president and his staff. The Special Forces Command received approval and funding from the Secretary of Defense to deploy BMIS-T to all care providers within its headquarters special operations command, which includes all military branches. Medical providers in the Army alone number around 50,000, according to Morris.<sup>48</sup> This case study has enormous potential for a humanitarian organization in the field. As discussed in Chapter Two, there are many differences between a humanitarian aid organization and the U.S. Military, but there are also some similarities. This case study is relevant to any medical organization that deploys to an operational setting. A humanitarian organization could adopt a similar technology to deploy with their teams. This case study provides the data to support starting such a venture.

## **B. PURCHASING A HANDHELD PC**

Handheld computers are rapidly becoming a very common tool for the clinician. Their uses range from electronic organizers to portable medical libraries. Prior to investing in a handheld computer it is important to determine how it will be used.

### **1. Important Factors When Choosing a Handheld**

- **Microsoft Office:** Microsoft's pocket PC offers integration to the popular MS Office Suite.
- **Medical Applications:** Appendix C is a comprehensive list of medical software downloads for the IPAQ.
- **Size:** Most of the handhelds on the market are a reasonable size and will fit in most rear pants pockets.

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<sup>48</sup> Mobile point-of-care solutions support medics on the battlefield. HP Telemedicine and Advanced Technology Research Center, [http://www.tatrc.org/website\\_bmist/HP-BMIS-T.pdf](http://www.tatrc.org/website_bmist/HP-BMIS-T.pdf), 8/6/2005

- Price: The prices of handhelds range from \$150.00 to \$500.00. Pricing depends mostly on amount of RAM, display type (color vs. monochrome), and multimedia capabilities. As a general rule Pocket PC's are usually more expensive. The following table shows a list of the best-selling handhelds and their prices.<sup>49</sup>

Palm m100	\$150.00
Palm IIIxe	\$200.00
Handspring Visor Deluxe	\$249.00
Compaq Aero 1550 Pocket PC	\$280.00
Handspring Visor Platinum	\$299.00
Palm IIIC	\$329.00
Palm Vx	\$400.00
Handspring Visor Prism	\$449.00
Palm VIIx	\$449.00
Casio Cassiopeia EM-500 Color Pocket PC	\$499.00
Compaq iPaq Pocket PC	\$499.00

Table 7. Best-Selling Handhelds, by Price

**Tough Handhelds:** The Itronix Q200 is the handheld of choice due to its ability to last in a rugged environment. It is an ultra-rugged Pocket PC designed for mobile workers who operate in demanding, mission-critical environments. Its high impact plastic and metal construction provides an exceptionally lightweight, rugged framework, with the strength to withstand the roughest outdoor handling and extreme weather conditions. At just 1.75 pounds, it can be easily clipped to a belt or carried on a wrist strap. Units range in price from \$2,600 - \$3,145.50

<sup>49</sup> Handheld Buying Guide, <http://www.mdtool.com/palmguide.html>, 8/4/2005

<sup>50</sup> Itronix Q200, <http://www.itronix.com/products/handhelds/q200.asp>, 8/4/2005

PRODUCT	PRICE
Itronix Q200, 128MB RAM, 1GB Disk	\$2,600.00
Itronix Q200, 128MB RAM, 2GB Disk	\$2,745.00
Itronix Q200, 128MB RAM, 4GB Disk	\$3,145.00

Table 8. Prices for the Itronix Q200

### C. SKYPE: P2P TELEPHONY

Skype is a program that can be installed on a handheld computer. For Skype-to-Skype phone calls it uses the peer-to-peer ("P2P") technology used for file-sharing applications such as Napster. P2P telephony followed P2P, and Skype was founded to develop the first P2P telephony network. Internet-based telephony - Voice-over-IP - (VoIP) has been around for years but is now starting to break into the mainstream market.

The following are some of the techniques that Skype employs to deliver state-of-the-art IP-based telephony.

#### 1. Firewall and NAT (Network Address Translation) Traversal

Non-firewalled clients and clients on publicly routable IP addresses are able to help NAT'ed nodes to communicate by routing calls. This allows two clients who otherwise would not be able to communicate to speak with each other. Because the calls are encrypted end-to-end, proxies limit the security or privacy risk. Likewise, only proxies with available spare resources are chosen so that the performance for these users is not affected.

Several new techniques were also developed in order to avoid end-user configuration of gateways and firewalls, whose non-intuitive configuration settings typically prohibit the majority of users from communicating successfully. Skype works behind the majority of firewalls and gateways with no special configuration.

#### 2. Global Decentralized User Directory

Most instant message or communication software requires some form of centralized directory for the purposes of establishing a connection between end users in order to associate a static username and identity with an IP number that is likely to change. This change can occur when a user relocates or reconnects to a network with a dynamic IP address. Most Internet-based communication tools track users with a central

directory which logs each username and IP number and keeps track of whether users are online or not. Central directories are extremely costly when the user base scales into the millions. By decentralizing this resource-hungry infrastructure, Skype is able to focus all of its resources on developing cutting-edge functionality.

P2P network technologies used by file-sharing applications would be almost suitable for decentralizing, but those networks are fragmented in nature – a search does not reach all nodes in the network. Clearly, in order to deliver high quality telephony with the lowest possible costs, a third generation of P2P technology ("3G P2P") or Global Index (GI) was a necessary development and represents yet another paradigm shift in the notion of scaleable networks. The Global Index technology is a multi-tiered network in which “supernodes” communicate in such a way that every node in the network has full knowledge of all available users and resources with minimal latency.

### **3. Intelligent Routing**

By using every possible resource, Skype is able to intelligently route encrypted calls through the most effective path possible. Skype keeps multiple connection paths open and dynamically chooses the one that is best suited at the time. This has the noticeable effect of reducing latency and increasing call quality throughout the network.

### **4. Security**

Encryption is necessary because all calls are routed through the public Internet. Skype encrypts all calls and instant messages end-to-end for privacy.

### **5. Super-Simple User Interface**

Skype was designed to be simple to use, for anyone who can use Windows and telephones. The software works equally well and is simple to use also on other platforms where Skype runs (Pocket PC, Linux, Mac OS X).<sup>51</sup>

### **6. Minimum System Requirements**

In order to use Skype, the handheld must meet the following minimum requirements:

- Windows Mobile 2003 for Pocket PC
- 400 MHz processor
- WiFi-enabled

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<sup>51</sup> Skype, <http://www.skype.com/products/explained.html>, 8/4/2005



- A headset with a microphone to use Skype. (Note, if the IPAQ has an integrated microphone that will have to serve as the microphone.)

#### **D. STORAGE**

Storing medical information is a difficult task in a hospital setting. Trying to secure it in an operational setting is even more difficult. A series of AES Encrypted USB Flash drives have been introduced that ensure confidentiality of sensitive data and information that is stored on their flash drives. Some of these USB 2.0 Flash Drives are currently undergoing testing for FIPS (Federal Information Processing Standards) certification. The drives utilize 256-bit AES Encryption to protect data stored on the drive and can be plugged into any available USB or USB 2.0 port and be used immediately. These drives work with Windows, Macintosh and Linux machines. It is important to note that the AES Encryption features do not yet work with Macintosh or Linux Operating Systems; however, the drive can be used as a basic storage device on both.<sup>52</sup>

An Internet connection is also needed for telemedicine operations. Various options for connections are available.

#### **E. CONNECTION**

It is vital that an Internet connection is established once in country. Due to the conditions, this may be a difficult task. The following section will assist in identifying the capability of various transmission mediums.

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<sup>52</sup> Beach Audio - Kanguru Solutions Aes-kmd-2g Kanguru Micro Drive, 2gb [http://www.beachaudio.com/product\\_info.php?products\\_id=27253&GCID=C12585x003&GTKW=aes-kmd-2g&ref=true](http://www.beachaudio.com/product_info.php?products_id=27253&GCID=C12585x003&GTKW=aes-kmd-2g&ref=true), 8/6/2005

Data Stream	Internet Connection Speed			
	56K Connection	256K Connection	512K Connection	1.54M Connection
1 Mb	4.16 min	.54 Min	.27 min	.09 min
5 Mb	20.8 min	2.73 min	1.37 min	.45 min
10 Mb	41.6 min	5.45 min	2.73 min	.91 min
20 Mb	1 hr 23 min	10.9 min	5.45 min	1.82 min
50 Mb	3 hr 46 min	27.25 min	13.63 min	4.54 min
100 Mb	7 hr 32 min	54.5 min	27.25 min	9.08 min

Table 9. Transmission Downloads Time<sup>53</sup>

### 1. 56kbps Modem

Though the chance of a telephone infrastructure existing in remote locations is unlikely (especially immediately following a disaster), telemedicine can perform some limited operations with a 56k modem. 56k modems are sensitive to phone line conditions both inside your house and outside on the telephone company's network.

A computer is a digital machine, while telephone lines are analog, transmitting data by sound. Modems work by taking a digital signal and transforming it into analog (sound) over a phone line. In order to achieve connections higher than 33.6Kbps, modem companies have invented a technology to use to their advantage the all digital connectivity between the server modems and the Public Switch Telephone Network (PSTN). A 56k modem connection is only one way; 33.6Kbps is still the limit for the upload rates because of the additional analog to digital conversion.

The fact is that the telephone system is designed to host voice phone calls which require far less quality than a data connection requires. Therefore, in some countries with

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<sup>53</sup> Small Business Connection,  
[http://www.connected.com/support/FAQs\\_smb/FAQs\\_smb\\_connections.asp](http://www.connected.com/support/FAQs_smb/FAQs_smb_connections.asp), 8/4/2005

old telephone systems, to upgrade their equipment you may have equipment that will not support 56kbps quality connections very well or even at all.

## **2. DSL**

Digital Subscriber Line (DSL) is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. xDSL refers to different variations of DSL, such as ADSL, HDSL, and RADSL. Assuming your home or small business is close enough to a telephone company central office that offers DSL service, you may be able to receive data at rates up to 6.1 megabits (millions of bits) per second (of a theoretical 8.448 megabits per second), enabling continuous transmission of motion video, audio, and even 3-D effects. More typically, individual connections will provide from 1.544Mbps to 512Kbps downstream and about 128Kbps upstream. A DSL line can carry both data and voice signals and the data part of the line is continuously connected.

## **3. Cable Modem**

A cable modem is a device that enables you to hook up your PC to a local cable TV line and receive data at 1.5Mbps or more. This data rate far exceeds that of the prevalent 28.8 and 56Kbps telephone modems and the 128Kbps speed of Integrated Services Digital Network (ISDN) and is nearly equal to the data rate available to subscribers of Digital Subscriber Line (DSL) telephone service. The actual bandwidth for Internet service over a cable TV line is up to 27Mbps on the download path to the subscriber with about 2.5Mbps of bandwidth for interactive responses in the other direction.

## **4. Satellite Connection**

A satellite Internet connection is an arrangement in which the upstream (outgoing) and the downstream (incoming) data are sent from, and arrive at, a computer through a satellite. Each subscriber's hardware includes a satellite dish antenna and a transceiver (transmitter/receiver) that operates in the microwave portion of the radio spectrum.

In a two-way satellite Internet connection, the upstream data is usually sent at a slower speed than the downstream data arrives. Thus, the connection is asymmetric. Uplink speeds are nominally 50 to 150 Kbps for a subscriber using a single computer.

The downlink occurs at speeds ranging from about 150Kbps to more than 1200Kbps, depending on factors such as Internet traffic, the capacity of the server, and the sizes of downloaded files.

Acquiring a satellite connection can be an expensive venture. The price of the satellite equipment can cost almost \$3,000 and the monthly service can cost over \$20,000 (see appendix B). Some remote areas of the world do not have a communication infrastructure and a 56K modem connection may be hard to acquire. One alternate solution is try to find someone in the area that is already subscribing to satellite based Internet service and try to share the bandwidth and the cost. If there is a communication infrastructure, see what types of services are available.

#### **F. TRAINING**

Given the technological intricacy of telemedicine systems, suitable training of all personnel concerning the use and technical support of your telemedicine system is necessary for program success. With all technical applications, repetitive training to reinforce familiarity and to maintain skill level is recommended. In designing the training program, consider the following factors which affect training requirements:

- The number of potential employees participating in the telemedicine program
- The equipment they are expected to use
- Services to be performed
- The anticipated annual employee turnover rate
- The availability of ongoing in-house technical support
- Quality assurance requirements

Each of these factors will help shape the type of training required. With that said, training should be performed no less than annually. All new employees should be required to go through an indoctrination program that covers all major training. The output and competence of employees will increase considerably with an investment in a successful training program.

## **VIII. CONCLUSION AND FOLLOW-ON RESEARCH**

### **A. CONCLUSION**

Researching and choosing technologies that will function with the FLAK to support HA/DR is a dynamic topic, but this paper has only touched the surface. The next necessary step is long term deployment of 30, 60, 90 or 180 days to identify the technology's weaknesses and strengths. Studying this topic in a controlled setting or in a deployed setting for 1-2 weeks will never fully identify capabilities or faults. Some areas in need of research are highly technical, but many non-technical processes would benefit from this research as well.

There is currently no deployable stand-alone medical technology. All of the current technologies require some level of medical proficiency to use, whether by a medic, nurse, physician assistant or physician. Also, this technology can be complex and is being deployed to environments that are not kind to the equipment. Until long-term research can be performed with constant monitoring and use, the real capabilities will not be known. In addition to medical personnel being assigned to the deployment team, there is also a need for technical personnel to set up, maintain and troubleshoot the equipment. Though this thesis has demonstrated that there is a cost savings when compared with MEDEVACS and telemedicine, it remains uncertain if the employment and deployment of technical and medical personnel can be supported, or accepted. Is this money better spent in other areas?

Some of the areas that require further research and analysis are as follows:

### **B. HEALTHCARE INFORMATION TECHNOLOGY IN THE FIELD**

Identifying medical components to function in concert with a Fly-Away-Kit is not an easy task. Identifying those strengths and weaknesses without a full deployment is challenging. This research evaluated different scenarios where technology could support different medical operations in isolated locations and serve as a baseline for medical operations in remote locations where medical IT systems had little or no use in the past. As stated earlier, in the U.S. healthcare system only 17 percent of doctors' offices check electronic records prior to treating patients or prescribing medicine and only 8 percent of

physicians use a computerized physician order entry system. It is a major undertaking to convince doctors in the field to practice what their colleagues in air-conditioned sterile environments are hesitant to do. It is vital to start small and show benefits before a large scale deployment is attempted.

The author has made an argument for the use of an EMR in cooperation with a telemedicine suite to assist medical humanitarian organizations with their operations. With the average cost of a MEDEVAC costing over \$10,000, the initial startup cost of a telemedicine suite pales in comparison. Additionally, with the increase in air ambulance crashes, it is clear that the cost of medical IT is much lower than the dangers and costs of losing staff members' or patients' lives. One other concern not addressed in this thesis is the ability of small humanitarian organizations to be cut off from their larger counterparts due to the inability to deploy such technologies. Protocols will need to be developed to ensure continuity of care whether the care is performed by a small or large NGO.

#### **C. TECHNOLOGY SUPPORT**

Some of the lessons learned from NPS's tsunami relief efforts in Thailand can be applied to almost any future humanitarian medical mission. Though the area of Thailand is not representative of the entire globe, it does show that the climate can wreak havoc on technology. Additionally, a humanitarian organization can not expect every country to welcome humanitarian aid with open arms in the manner that the Thai government did after the tsunami. The maintenance of the equipment and applications is a question that remains to be answered. Due to the lack of models of organizations currently deploying such technology on large scales, the author has proposed the employment of technology support to deploy with the teams. Technology support personnel can ensure uptime and can also be responsible for the maintenance, setup and deployment of information technology. This can represent an enormous cost and ties to the concern that smaller NGOs may get left out.

#### **D. INTEROPERABILITY**

The author has gone to great length to address interoperability issues. Employment of worldwide standards will ensure that all systems are able to pass information to those that need it. If the medical information cannot be shared, then the service is useless, due to the fact that medical information can take many forms. Though

these recommendations are made, there is no guarantee that the organizations will follow them or decide that software that has enabled these standards is too expensive. The result will be stovepipe systems. It is imperative for success that humanitarian organizations avoid the temptation and incorporate systems with standards similar to HL7 and DICOM.

#### **E. COMMUNICATIONS**

Who will acquire communication solutions such as SATCOM is a question that can only be answered as the requirement is developed. In this day and age, SATCOMs are extremely expensive and differ from country to country. This may be the biggest unknown when the team leaves for their destination. Satellites are a good communication platform but are expensive, and many of the promising emerging technologies in this area are untested. Further research should consider additional connectivity options and cooperation with other organizations to maximize benefits, mitigate problems with IP over satellites, and test solutions.

#### **F. HIPAA AND SECURITY**

The applicability of HIPAA will always remain a question mark. Whether NGOs will decide to implement HIPAA or some international standard remains to be seen. With the lack of implementation of IT in humanitarian medical missions, there may be some that argue that there is not a need for an international standard to regulate the use of IT in humanitarian missions. As the application of IT in such missions becomes more widespread, the time to develop a standard may have already passed. The United Nations should lead this effort and establish a set of standards to globally protect patient's information. Furthermore, HIPAA would not have the impact it does in the U.S. if it did not have the ability to impose fines up to \$250,000 and ten years in prison. The U.N. would need to consider some mechanism of enforcement to guarantee compliance with the standard, but this raises concerns about where the fine will be paid, government corruption, countries that decide not to participate in the enforcement, countries that do not belong to the U.N., etc. Information security is a broad subject requiring in-depth research. For any medical suite to be used in the field, a layered defense will be needed.

#### **G. EQUIPMENT**

Commercial airlines are increasingly lowering the weight allowed for check-in baggage. Capt Lancaster's FLAK is approximately one hundred pounds, but this does

include network cables, power cords, a power source, handheld devices, and other required equipment. The combined equipment weight requirement could quickly climb to over two hundred pounds. Once the equipment arrives in country, there is the concern of whether it will pass through Host Nation Customs and how long it will take. These questions may only be answered after several deployments.

Once again, the next step for this research is field experimentation. Even the conditions found at the NPS test site on Fort Ord, California do not adequately replicate real-life parameters. The weather in Monterey is stable and cannot double for desert, tropical environments, the artic, etc. Cooperation between an NGO and NPS to deploy and test the research in field conditions would likely yield significant results.



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## APPENDIX A. LICENSURE AND CERTIFICATION

### NATIONAL DATABASES

- [ABMS Verification Service](#) (board certification for physicians)
- [AMA Physician Select](#) (All licensed medical and osteopathic physicians, but you must specify state in which the doctor practices)
- [ChoicePoint Doctor Search](#) (Free search by state, \$9.95 for disciplinary details)
- [HealthGrades](#) maintains a searchable database of medical and osteopathic physicians. Its reports cover education and training; specialties; board certification; disciplinary actions and several other characteristics. Searching, which costs \$7.95 for the first search and \$2.95 for each additional search, requires the physician's last name and state of practice. The resultant information includes whether the doctor has been sanctioned within the past few years, but no details are provided. People seeking a new doctor in their own community can get a report that compares up to 20 of them for \$9.95. Reports are also available for hospitals and nursing homes.
- [Joint Commission on Accreditation of Health Care Organizations](#): Accreditation directory
- [OIG Exclusions Database](#): (individuals/entities excluded from federally funded health-care programs)
- [Public Citizen](#) (Free lists of physicians sanctioned by 19 states. Details cost \$10 for 10 individual reports)

### STATE DATABASES

MEDICAL DOCTORS	OSTEOPATHIC DOCTORS
<a href="#">Alabama State Board of Medical Examiners</a>	
<a href="#">Alaska State Medical Board</a>	
<a href="#">Arizona Medical Board</a>	
<a href="#">Arkansas State Medical Board</a>	
<a href="#">Medical Board of California</a>	<a href="#">Osteopathic Medical Board of California</a>
<a href="#">Colorado Board of Medical Examiners</a>	
<a href="#">Connecticut Medical Examining Board</a>	
<a href="#">Delaware Board of Medical Practice</a>	

<b>MEDICAL DOCTORS</b>	<b>OSTEOPATHIC DOCTORS</b>
<a href="#">District of Columbia Board of Medicine</a>	
<a href="#">Florida Board of Medicine</a>	
<a href="#">Georgia Composite State Board of Medical Examiners</a>	
<a href="#">Hawaii Board of Medical Examiners</a>	
<a href="#">Idaho State Board of Medicine</a>	
<a href="#">Illinois Department of Professional Regulation</a>	
<a href="#">Medical Licensing Board of Indiana</a>	
<a href="#">Iowa State Board of Medical Examiners</a>	
<a href="#">Kansas Board of Healing Arts</a>	
<a href="#">Kentucky Board of Medical Licensure</a>	
<a href="#">Louisiana State Board of Medical Examiners</a>	
<a href="#">Maine Board of Licensure in Medicine</a>	<a href="#">Maine Board of Osteopathic Licensure</a>
<a href="#">Maryland Board of Physician Quality Assurance</a>	
<a href="#">Massachusetts Board of Registration in Medicine</a>	
<a href="#">Michigan Board of Medicine</a>	<a href="#">Michigan Board of Osteopathic Medicine and Surgery</a>
<a href="#">Minnesota Board of Medical Practice</a>	
<a href="#">Mississippi State Board of Medical Licensure</a>	
<a href="#">Missouri State Board of Registration for the Healing Arts</a>	
<a href="#">Montana Board of Medical Examiners</a>	
<a href="#">Nebraska Board of Medicine and Surgery</a>	
<a href="#">Nevada State Board of Medical Examiners</a>	<a href="#">Nevada State Board of Osteopathic Medicine</a>
<a href="#">New Hampshire Board of Medicine</a>	

<b>MEDICAL DOCTORS</b>	<b>OSTEOPATHIC DOCTORS</b>
<a href="#"><u>New Jersey State Board of Medical Examiners</u></a>	
<a href="#"><u>New Mexico State Board of Medical Examiners</u></a>	<a href="#"><u>New Mexico Board of Osteopathic Medical Examiners</u></a>
<a href="#"><u>New York State Board for Professional Medical Conduct</u></a>	
<a href="#"><u>North Carolina Medical Board</u></a>	
<a href="#"><u>North Dakota State Board of Medical Examiners</u></a>	
<a href="#"><u>State Medical Board of Ohio</u></a>	
<a href="#"><u>Oklahoma State Board of Medical Licensure and Supervision</u></a>	<a href="#"><u>Oklahoma State Board of Osteopathic Examiners</u></a>
<a href="#"><u>Oregon Board of Medical Examiners</u></a>	
<a href="#"><u>Pennsylvania State Board of Medicine</u></a>	<a href="#"><u>Pennsylvania State Board of Osteopathic Medicine</u></a>
<a href="#"><u>Rhode Island Board of Medical Licensure and Discipline</u></a>	
<a href="#"><u>South Carolina Board of Medical Examiners</u></a>	
<a href="#"><u>South Dakota State Board of Medical and Osteopathic Examiners</u></a>	
<a href="#"><u>Tennessee Board of Medicine</u></a>	<a href="#"><u>Tennessee Board of Osteopathic Examiners</u></a>
<a href="#"><u>Texas State Board of Medical Examiners</u></a>	
<a href="#"><u>Utah Department of Commerce</u></a>	<a href="#"><u>Board of Osteopathic Medicine</u></a>
<a href="#"><u>Vermont Board of Medical Practice</u></a>	<a href="#"><u>Vermont Board of Osteopathic Physicians and Surgeons</u></a>
<a href="#"><u>Virginia Board of Medicine</u></a>	
<a href="#"><u>Washington Medical Quality Assurance Commission</u></a>	<a href="#"><u>Washington State Board of Osteopathic Medicine and Surgery</u></a>
<a href="#"><u>West Virginia Board of Medicine</u></a>	<a href="#"><u>West Virginia Board of Osteopathy</u></a>
<a href="#"><u>Wisconsin Medical Examining Board</u></a>	
<a href="#"><u>Wyoming Board of Medicine</u></a>	

## MISCELLANEOUS DATABASES

Federation of State Medical Boards - <http://www.fsmb.org>

National Association of Boards of Pharmacy – <http://www.nabp.net>

National Board of Medical Examiners – <http://www.nbme.org>

National Board of Osteopathic Medical Examiners, Inc. – <http://www.nbome.org>

National Council of State Boards of Nursing – <http://www.ncsbn.org>

Nurse Licensure Compact – <http://www.ncsbn.org/nlc/>

Source: <http://www.ihealthpilot.org/research/lookup.shtml>, 8/3/05



**APPENDIX B. RETAIL PRICING AND TECHNICAL  
INFORMATION**

# **Bentley Walker LTD**

RETAIL PRICING AND TECHNICAL INFORMATION

**30/07/04**

All prices are minus VAT where applicable



FOR W3A SERVICE

### HARDWARE COSTS

Complete system with 1.2 M Dish \$1812.50

Complete system with 1.8 M Dish \$2812.50

Prices include dish, mount, arms, head unit, Star Pro system. Cable and connectors are supplied at an extra cost

### HOME SUBSCRIPTION

HOME 1000

128Kbits up – 1024KBitsDOWN

SAR – 20:1 **5 Private IPs**

MONTHLY QUARTERLY

€305.00 €915.00

**\$336.00 \$1007.00**

### BUSINESS SUBSCRIPTIONS

ALL SAR 10:1 – All come with 13 Private IPs

#### OFFICE 500

128Kbits UP – 512Kbits DOWN

MONTHLY QUARTERLY

€328.00 €984.00

\$362.00 \$1083.00

#### OFFICE 500+

256Kbits UP – 512Kbits DOWN

MONTHLY QUARTERLY

€403.00 €1208.00

\$443.00 \$1329.00

#### OFFICE 500 PREMIUM

512Kbits UP – 512Kbits DOWN

MONTHLY QUARTERLY

€489.00 €1464.00

\$539.00 \$1614.00

ALL SAR 10:1 – All come with 29 Private IPs

#### OFFICE 1000

128KBits UP – 1024Kbits DOWN

MONTHLY QUARTERLY

€547.00 €1639.00

\$602.00 \$1803.00

**OFFICE 1000+**

256Kbits UP – 1024Kbits DOWN	
MONTHLY	QUARTERLY
€748.00	€2243.00
\$823.00	\$2467.0

**OFFICE 1000 PREMIUM**

512Kbits UP – 1024Kbits DOWN	
MONTHLY	QUARTERLY
€ 863.00	€2588.00
\$948.00	\$2847.00

**OFFICE 2000**

128Kbits UP – 2048Kbits DOWN	
MONTHLY	QUARTERLY
€978.00	€2933.00
\$1076.00	€3226.00.

**OFFICE 2000+**

256KBits UP – 2048KBits DOWN	
MONTHLY	QUARTERLY
€1030.00	€3088.00
\$1133.00	\$3398.00

**OFFICE 2000 PREMIUM**

512Kbps UP – 2048Kbps DOWN		SAR 10:1
MONTHLY	QUARTERLY	
€1208.00	€3623.00	
\$1328.00	\$3985.00	

**OFFICE 4000 +**

256 Kbits UP – 4096 Kbits DOWN	
MONTHLY	QUARTERLY
€1714.00	€5141.00
\$2127.00	\$6385.00

**OFFICE 4000 PREMIUM**

512Kbits UP – 4096 DOWN	
MONTHLY	QUARTERLY
€1850.00	€5548.00
\$2295.00	\$6883.00

**OFFICE 4000 PREMIUM +**

1024 Kbits UP – 4096 Kbits DOWN	
MONTHLY	QUARTERLY
€2040.00	€5319.00
\$2531.00	\$7591.00

NB Please see our Grade of Service Document for accurate performance levels on all subscription packages

## Broadband Satellite IP Networking Terminal

Star Pro is a scalable, high performance satellite IP terminal that delivers broadband access with a high-speed return channel. Global Service Providers, ISP's, and corporations require efficient, broadband IP networking solutions to satisfy bandwidth-intensive applications such

As Internet access, digital media streaming, video-conferencing, distance education, file transfer, multi casting, and virtual private networks. Star Pro is the ideal, low cost solution for these and many other IP-based services.

Star Pro has been developed under a unique combination of skills in data networking, digital communications, satellite access, and network management, to provide a low cost, scalable next generation satellite networking product.

Star Pro receives a broadband DVB outbound channel to 60 Mbps and provides a broadband satellite return channel with speeds up to 1.150 Mbps. The F-TDMA broadband return channel provides efficient broadband on demand and has DVB-RCS compliant turbo coding for enhanced throughput performance.

Star Pro supports IP routing, IP multicasting, IP Quality of Service, and TCP spoofing for 10 Mbps of unicast throughput. Star Pro's Web-based NMS is simple to operate, easy to configure, provides traffic statistics and call details detail records, and offers an SNMP interface.

## EXTRAS

UD Router and Acceleration Unit €995.00

Plus €150.00 support package this includes all software/hardware upgrades for the first year

VPN version router and local bandwidth manager unit €1995.00

Plus €300.00 Support package this includes all software/hardware upgrades for first year

Satellite Dish Trolley	£ 350.00	\$ 582.00	€ 493.50
Satellite Meter	£ 260.00	\$ 475.00	
Dual Shot Cable	£ 1.60	\$ 3.00	€ 2.49
Fixing Bracket	£ 65.00	\$	€

DEDICATED BAND WIDTH

**W1 & W3 STAR PRO ONLY\***

**COSTS PER MONTH AS AT 17/02/04**

**PLEASE NOTE NO FREE MONTHS ON DEDICATED**

**UPLOAD IN KILOBITS**

	<b>\$672.00</b>
	<b>\$1274.00</b>
<b>256</b>	<b>\$2422.00</b>
<b>512</b>	<b>\$4625.00</b>

**DOWNLOAD IN KILOBITS**

	<b>\$835.00</b>
	<b>\$1589.00</b>
	<b>\$3037.00</b>
	<b>\$5784.00</b>
	<b>\$8674.00</b>
<b>1 MB</b>	<b>\$11011.00</b>
<b>2 MB</b>	<b>\$21584.00</b>

\* Dedicated bandwidth options are available on PAS1R and NSS6, please ask for further details.

## CABLE REQUIREMENTS

STAR PRO

**RG6 EQUIVALENT TO CT 100**

**TWIN SHOT CABLE (UP TO 30M RUN)**

**Per metre £1.60 - \$2.75 - €2.49 a minimum run of 30m is necessary.**

**We cut the cable to this length and fit Snap on connectors at a cost of:**

**£58.00 - \$105.00 - €85.00**

**RUNS IN EXCESS OF 30 METRES**

**RG11 EQUIVALENT TO WF165**

**SINGLE CABLE TWO RUNS REQUIRED**

**Customers will either have to specify length required and we will fit the plugs, or purchase the Snap and Seal Tool as a cost of:**

**£44.00 - \$79.00 - €66.00**

Connectors for set of 4 required £14.00 - \$25.20 - €20.80

**RG11 PER 250 METRE ROLL £224.00 - \$400.00 - €332.00**

**RG6 PER 250 METRE ROLL £280.00 - \$500.00 - €415.00**

## APPENDIX C. WINDOWS CE AND POCKET PC SOFTWARE TO DOWNLOAD

**pocketpcsoft.net Windows CE and Pocket PC Software to download**

<http://www.ipaqsoft.net/php/ppcresults.php?type=m>

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>HemHdbk&amp;trade 6th Ed.</u></a>	A portable, quick-reference guide with clinical information on over 100 hematologic diseases and their management.	\$44.95	2005-07-29
<a href="#"><u>Mosbys Medical Drug Reference 2004</u></a>	A trusted pharmacological reference resource for primary care physicians and allied healthcare personnel.	\$39.95	2005-07-29
<a href="#"><u>EssentialSur</u></a>	A-Z listing of 400 common or important surgical disorders and syndromes.	\$39.95	2005-07-09
<a href="#"><u>Patient Tracker Desktop (LITE)</u></a>	Patient Tracker Desktop is a robust, point-of-care charting application designed for clinicians who operate in small outpatient clinics and offices.	\$299.00	2005-07-06
<a href="#"><u>OHCM6™</u></a>	Covers all areas of internal medicine and provides rapid, on-the-spot access to evidence-based clinical management.	\$39.95	2005-07-06
<a href="#"><u>WUCID™</u></a>	This handy consult reference covers the full spectrum of infectious disease problems.	\$39.95	2005-07-06
<a href="#"><u>MeasureUP: Growth Percentile, BMI more</u></a>	Track kids growth pattern by calculating and recording Growth Percentiles, Body Mass Index (BMI) and projected adult height. Export to MS excel.	\$9.95	2005-06-27
<a href="#"><u>NEW! - Anesthesia Central</u></a>	A premier collection of disease, drug, test, procedure, and literature information for anesthesiologists, critical care specialists, nurse anesthetists, and trainees.	\$149.95	2005-06-16
<a href="#"><u>PEPID RN CC Critical Care Nursing Suite</u></a>	PEPID RN CC is the only all inclusive electronic resource designed for critical care nurses. PEPID RN CC contains all the	\$139.95	2005-06-09

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	content of PEPID RN, plus extensive critical care information.		
<a href="#">PEPID RN CC Critical Care Nursing Suite</a>	PEPID RN CC is the only all inclusive electronic resource designed for critical care nurses. PEPID RN CC contains all the content of PEPID RN, plus extensive critical care information.	\$139.95	2005-06-09
<a href="#">PsychIx</a>	A bestselling guide to the understanding of drug interactions.	\$44.95	2005-05-19
<a href="#">Handy patients desktop edition</a>	Handy patients is a powerful and professional patient tracker for PocketPC, TabletPC and DesktopPC	freeware	2005-05-19
<a href="#">PsychTx™</a>	Contains Quick Reference Guides (QRGs) to all of the published APA Practice Guidelines.	\$39.95	2005-05-19
<a href="#">MyPersonalDiet</a>	Manage your weight, fitness and health by defining, tracking and monitoring your own diet and nutrients that matter to you.	\$19.95	2005-05-07
<a href="#">Portable NoteCard Standard (Flash Card)</a>	Study 3x5 note card, vocab, definition, or question on Pocket PC.	\$2.99	2005-05-07
<a href="#">Harrisons16</a>	Referenced to the world's best-selling internal medicine textbook, this handy reference provides on-the-spot answers to the problems you face daily.	\$59.95	2005-05-07
<a href="#">Fetal Biometry</a>	A professional tool that calculates fetal growth by ultrasound measurements. Shows graphically the results related to the standard development.	\$14.99	2005-05-03
<a href="#">Wound &amp; Skin Infections 2006</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$7.95	2005-05-03
<a href="#">MosbyDrugs5</a>	Provides convenient, take-anywhere access to current, unbiased, accurate, and reliable drug information and	\$49.95	2005-05-03



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	interactions.		
<a href="#"><u>Clinical Infectious Diseases 2006</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$14.95	2005-05-03
<a href="#"><u>Harrisons Manual 16th ed.</u></a>	The worlds best-selling internal medicine content now available for PDA, Web, Wireless on Unbound Medicines award-winning platform! NEW Edition!	\$59.95	2005-04-15
<a href="#"><u>Dx/Rx: Valvular Heart Disease</u></a>	Precise, up-to-date information for diagnosis and treatment of Valvular Heart Disease.	\$34.95	2005-04-15
<a href="#"><u>Dx/Rx: Coronary Thrombosis</u></a>	Details precise, up-to-date information for diagnosis and treatment of Coronary Thrombosis.	\$34.95	2005-04-15
<a href="#"><u>MeasureUP: Track kids growth pattern</u></a>	Pocket PC application to track kids growth pattern by calculating and recording Growth Percentiles, Body Mass Index (BMI) and projected adult height, with MS excel export capability.	\$9.95	2005-04-15
<a href="#"><u>Patient Tracker 5.2 for Pocket PC</u></a>	Patient Tracker allows mobile access to patient records including patient demographics, laboratory results, medication/allergy lists, test results, and radiology reports.	\$9.95	2005-04-15
<a href="#"><u>IVDH8™</u></a>	Crucial details that make safe and effective administration of I.V. drugs possible are now just one tap away!	\$41.95	2005-04-15
<a href="#"><u>Griffiths 5 Minute Clinical Consult</u></a>	Whether you need to confirm critical diagnostic criteria before initiating treatment, or are trying to choose the best medical or surgical approach for a particular patient...	\$64.95	2005-04-15
<a href="#"><u>Current Consult: Surgery</u></a>	Brings you authoritative clinical answers on more than 360 surgically treated disorders in the most efficient format.	\$69.95	2005-04-07
<a href="#"><u>Tabers20™</u></a>	For more than 65 years, Tabers	\$49.95	2005-03-31

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	has provided students and practitioners with the definitions and information they need to provide superior care for their patients.		
<a href="#">Daviss Drug Guide for Physicians</a>	This drug reference remarkably contains the entire content of the Davis's Drug Guide (9th Edition), including integrated calculators by Medical Wizards	\$49.99	2005-03-31
<a href="#">RadRevMnl™</a>	The #1 radiology board reviewthe Green Bookis now available in PDA format!	\$99.00	2005-03-31
<a href="#">OncoMD05™</a>	Completely revised and updated for 2005, this practical handbook is an up-to-date guide to all aspects of cancer chemotherapy.	\$75.95	2005-03-31
<a href="#">NatMed05™</a>	Natural Medicines Comprehensive Database 2005 gives you everything you want to know about herbs, vitamins, minerals, supplements.	\$92.00	2005-03-31
<a href="#">Harrisons Manual of Medicine</a>	Best Medical Application 2004 finalist! The worlds best-selling internal medicine brand optimized by Unbound Medicine for handheld devices. Buy now and get the upcoming 16th edition FREE!	\$59.95	2005-03-31
<a href="#">JavaPK for Window Mobile 2003 Device</a>	a clinical pharmacokinetic (or therapeutic drug monitoring, TDM) tool for Window Mobile 2003 Device	\$29.50	2005-03-31
<a href="#">Physi-Calc</a>	Physi-Calc delivers patient-specific, best-practice treatment information at point of care without disrupting workflow.	\$24.95	2005-03-31
<a href="#">Clinical Hematology-Oncology 2006</a>	A medical reference text with detailed step-by-step procedures, work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$11.95	2005-03-31
<a href="#">MeasureUP</a>	Pocket PC tool to calculate and record Growth Percentiles and Body Mass Index (BMI)	\$8.50	2005-03-31

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>STDL Biorhythms</u></a>	STDL Biorhythms helps you to calculate your biorhythms. This is a small, convenient and original tool for PocketPC.	\$12.95	2005-03-31
<a href="#"><u>PEPID RN Student Clinical Companion</u></a>	The only "all-in-one" fully integrated medical reference software for nurses in all settings.	\$119.95	2005-03-31
<a href="#"><u>PEPID RN Student Clinical Companion</u></a>	The only "all-in-one" fully integrated medical reference software for nurses in all settings.	\$119.95	2005-03-31
<a href="#"><u>NCLEX-RN®, 8th Ed.</u></a>	The top-selling NCLEX-RN® review reflects the current NCLEX® test plan and contains more than 5,000 total test questions-including alternate-format questions-to help students practice taking the exam.	\$39.95	2005-03-31
<a href="#"><u>Dx/Rx: Heart Failure</u></a>	Up-to-date information for diagnosis and treatment of Heart Failure.	\$34.95	2005-03-31
<a href="#"><u>Psychiatric Diagnosis</u></a>	You can quickly diagnose Major Psychiatric Disorders with a question and answer format. Simply check the checkboxes with positive answers and press buttons to follow instructions to a diagnosis.	\$29.99	2005-03-06
<a href="#"><u>NEW! Unbound Surgery</u></a>	Comprehensive, up-to-date surgical knowledge delivered where and when you need it. Includes both Web and PDA versions!	\$99.95	2005-03-06
<a href="#"><u>Clinical Allergy &amp; Immunology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$8.95	2005-03-06
<a href="#"><u>Clinical Gastroenterology 2006</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$10.95	2005-02-19
<a href="#"><u>STDL Biorhythms</u></a>	STDL Biorhythms helps you to calculate your biorhythms. This is a small, convenient and original tool for PocketPC.	\$14.95	2005-02-19
<a href="#"><u>Clinical Nephrology 2006</u></a>	A medical reference text with	\$9.95	2005-02-19

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	detailed step-by-step procedures, work-ups and treatments.		
<a href="#"><u>WUCEndo™</u></a>	Ideal for residents, students and specialists seeking information on endocrinology and general internal medicine management.	\$39.95	2005-02-19
<a href="#"><u>CecilPkt22™</u></a>	Features Information on signs and symptoms, treatment summaries, differential diagnoses, pathophysiology and clinical manifestations.	\$59.95	2005-02-15
<a href="#"><u>IdentADrg5™</u></a>	Ident-A-Drug gives you quick accurate identification of oral tablets and capsules used in North America.	\$39.50	2005-02-15
<a href="#"><u>Slim Soft 1.0 for Pocket PC.</u></a>	A complete Weight Loss Management System. The software helps you to achieve your fitness and weight loss objectives by giving you the tools necessary to manage them.	\$15.99	2005-02-05
<a href="#"><u>Procedures in Medicine 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$19.95	2005-02-05
<a href="#"><u>Weight Loss</u></a>	Weight Loss allows you to keep track of your weight loss in a very easy way. This is a database template for our "Database 4 All" product.	\$3.95	2005-01-23
<a href="#"><u>Critical Care and Nutrition 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$12.95	2005-01-23
<a href="#"><u>Clinical Ear-Nose &amp; Throat 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2005-01-23
<a href="#"><u>PsychD5™</u></a>	Instant access to essential information on all drugs used in current psychiatric practice.	\$49.95	2005-01-23
<a href="#"><u>FerriCA05™</u></a>	Provides the busy physician with a fast, efficient way to identify important clinical information about the most commonly encountered medical disorders.	\$69.95	2005-01-23

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Clinical Endocrinology 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$10.95	2005-01-23
<a href="#"><u>Clinical Trauma &amp; Toxicology - 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$16.95	2005-01-07
<a href="#"><u>emPlastic™</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2005-01-07
<a href="#"><u>emPsych™ (eMedicine Psychiatry)</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2005-01-07
<a href="#"><u>emSurg™</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2005-01-07
<a href="#"><u>EchoGuide™</u></a>	The perfect quick consult for the busy cardiologist.	\$89.95	2005-01-07
<a href="#"><u>ParasitesDC™</u></a>	A concise, easy to use and accurate means of diagnosing commonly seen parasites of dogs and cats.	\$45.00	2005-01-07
<a href="#"><u>DrugTrials™</u></a>	Keep up with the latest in scientific clinical trial activity and drug development using market intelligence and knowledge resources from CenterWatch.	\$79.95	2004-12-28
<a href="#"><u>Nurses Pocket Drug Guide 2005</u></a>	The Essential Drug Guide for Registered Nurses and Advanced Practice Nurses!	\$24.95	2004-12-28
<a href="#"><u>DrugStudies™</u></a>	Providing patients and their advocates with a variety of information services and educational materials on clinical research.	\$19.95	2004-12-28
<a href="#"><u>Clinical Evidence with Auto-Updates</u></a>	The international source of the best available evidence for effective healthcare -- updated monthly on your PDA!	\$99.00	2004-12-28
<a href="#"><u>Essentials of Dx &amp; Tx in Cardiology</u></a>	The essential information needed to diagnose and manage patients with cardiac diseases	\$29.95	2004-12-07

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>NEW! Current Consult Surgery</u></a>	Authoritative clinical answers on more than 360 surgically treated disorders.	\$69.95	2004-12-07
<a href="#"><u>NEW! Current Consult Medicine</u></a>	Integrated medical reference suite covering 850+ disorders linked with 550 differential diagnoses. From the authors of the best-selling text, CURRENT Medical Diagnosis & Treatment!	\$59.95	2004-12-07
<a href="#"><u>AHFS DI™ (AHFS Drug Information)</u></a>	Provides more extensive evidence-based data than any other drug reference.	\$79.00	2004-12-07
<a href="#"><u>EssentialsDI™ (AHFS DI Essentials)</u></a>	An evidence-based foundation for safe and effective drug therapy.	\$49.00	2004-12-07
<a href="#"><u>FerriTests™</u></a>	Directs readers to the most efficient and cost-effective imaging and laboratory studies for any diagnostic challenge.	\$39.95	2004-12-07
<a href="#"><u>USMLE S3™ (Crush Step 3, 2nd Ed.)</u></a>	The market leader among all books for Step 3, Crush is an easy-to-use and effective high yield review for USMLE Step 3.	\$29.95	2004-12-07
<a href="#"><u>Clinical Cardiology 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$10.95	2004-12-07
<a href="#"><u>Pocket Guide to Diagnostic Tests, 4/e</u></a>	Quick, evidence-based information on the selection and interpretation of more than 350 laboratory, imaging and microbiology tests. NEW EDITION!	\$39.95	2004-12-07
<a href="#"><u>5-Minute Clinical Consult (5MCC), 2005</u></a>	Best Medical Application finalist, now with Auto-Updates! Unbounds 5-Minute Clinical Consult is the #1 selling 5MCC on the Microsoft store!	\$64.95	2004-12-07
<a href="#"><u>Lippincotts Nursing Drug Guide 2004</u></a>	The best-selling nursing drug reference newly updated for your PDA!	\$49.95	2004-12-07
<a href="#"><u>PsychoPharm™</u></a>	A quick one-stop guide to prescribing psychotropic drugs for patients at every stage of the life span—children, adolescents, adults, and the elderly.	\$39.95	2004-12-07

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>HPND5™</u></a>	The Fifth Edition of the popular Stedmans Concise medical dictionary is thoroughly updated with more than 51,000 entries.	\$34.95	2004-12-07
<a href="#"><u>Daviss Drug Guide with Auto-Updates</u></a>	WINNER, Best Medical Application 2004! Unbounds Davis Drug Guide auto-updates when you sync! Includes features and content from the new 9th print edition.	\$39.95	2004-12-07
<a href="#"><u>MedAbbrev™</u></a>	This best-selling portable resource provides authoritative definitions for all of the medical acronyms and abbreviations.	\$29.95	2004-11-29
<a href="#"><u>VetDrugs™</u></a>	Providing instant access to updated information on drug therapies for most animals.	\$54.95	2004-11-29
<a href="#"><u>Clinical Orthopedics 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$11.95	2004-11-28
<a href="#"><u>StudyBuilder Professional Edition DE</u></a>	Database software for audit, clinical trials, registries and patient management.	\$499.00	2004-11-27
<a href="#"><u>StudyBuilder Personal Edition DE</u></a>	Database software for audit, clinical trials, registries and patient management	\$149.00	2004-11-27
<a href="#"><u>StudyBuilder Student Edition DE</u></a>	Database software for audit, clinical trials, registries and patient management for students	\$49.00	2004-11-27
<a href="#"><u>FerriGuide6™</u></a>	Zero right in on the information busy readers need—differential diagnoses, clinical findings, lab values, and treatment guidelines.	\$39.95	2004-11-27
<a href="#"><u>StedmansA™</u></a>	Provides yet another format for healthcare students and professionals to quickly access medical abbreviations, acronyms & symbols and their expansions at the touch of their stylus.	\$38.95	2004-11-27
<a href="#"><u>5MCC™ 2005</u></a>	A comprehensive and structured clinical resource that is one of the most respected sources of information for medical disorders.	\$64.95	2004-11-27
<a href="#"><u>AcuPoints 3.5 (ARM,</u></a>	A AcupunctureSoftware for	\$89.99	2004-11-26

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>XScale)</u></a>	Professionals, Interns, & Students: Point locations, Notes area, Diagnosis / Treatment area, Body Measurement Pictures, Custom Protocols..		
<a href="#"><u>ClinUrology™</u></a>	Fundamental help with all major urologic conditions and diseases, plus time-saving recommendations on important problems.	\$64.95	2004-11-24
<a href="#"><u>emPeds™</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$79.00	2004-11-24
<a href="#"><u>VaccineCheck Immunization Program</u></a>	VaccineCheck offers the only interactive immunization program that will create an immunization schedule for any individual up to the age of 21 years.	\$39.95	2004-11-24
<a href="#"><u>Clinical Neurology - 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$11.95	2004-11-24
<a href="#"><u>My ICD Codes</u></a>	My ICD Codes is a tool to let you lookup ICD9 and ICD 10 Codes. ICD-10-CM/ICD-9-CM CLASSIFICATION OF DISEASES AND INJURIES, ICD-9-CM CLASSIFICATION OF Drug, etc..	\$49.99	2004-11-24
<a href="#"><u>XTerm Medical Dictionary</u></a>	Medical dictionary including unit converter and clinical calculators	\$15.50	2004-11-10
<a href="#"><u>emPedSurg™</u></a>	Designed for use by practicing surgeons, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2004-11-10
<a href="#"><u>Inside StudyBuilder</u></a>	The definitive guide to using StudyBuilder study design, management and data collection tools in Adobe Acrobat format	\$49.99	2004-11-10
<a href="#"><u>FamilyRx™</u></a>	Positive outcomes are achieved because patients understand the benefits and potential dangers of their medications.	\$15.00	2004-11-10



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>emRadio™ (eMedicine Radiology)</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2004-11-10
<a href="#"><u>emPMR™</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2004-11-10
<a href="#"><u>Vision Software Pack for PPC 2002</u></a>	Our best software at the best Price (Utilities, Health & Diet and funny games) - 50% Discount	\$38.69	2004-10-27
<a href="#"><u>PracticalTEETM</u></a>	Get detailed "how-to" information on transesophageal echocardiography (TEE) in the operating room, intensive care unit, office, or any other clinical setting.	\$79.95	2004-10-27
<a href="#"><u>HlthAssess™</u></a>	Instant access to all the assessment information nurses need.	\$35.95	2004-10-27
<a href="#"><u>emOPHTM</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2004-10-27
<a href="#"><u>emNeuro™</u></a>	Designed for use by practicing physicians, academicians and residents to provide rapid answers to clinical questions.	\$49.00	2004-10-27
<a href="#"><u>i2Workout PPC</u></a>	iFit.com compatible treadwill workout development and control program.	\$19.95	2004-10-27
<a href="#"><u>ClinSkills™</u></a>	This PDA reference provides instant guidance for performing over 165 skills.	\$39.95	2004-10-27
<a href="#"><u>PracticalTEETM</u></a>	Get detailed "how-to" information on transesophageal echocardiography (TEE) in the operating room, intensive care unit, office, or any other clinical setting.	\$79.95	2004-10-08
<a href="#"><u>MGHAnes™</u></a>	Provides instant access to guidelines for anesthesia procedures throughout the preoperative, intraoperative, and	\$49.95	2004-10-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	postoperative periods.		
<a href="#"><u>MedScales Clinical Assessment Software</u></a>	MedScales provides quick access and scoring of commonly used medical scales.	\$79.95	2004-10-08
<a href="#"><u>MD Coder PocketPC - Vascular Surgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Urology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Trauma</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Thoracic Surgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Pulmnology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Plastic Surgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it	\$279.00	2004-10-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	for free.		
<a href="#"><u>MD Coder PocketPC - Pediatric Surgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - ENT</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Orthopedics</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Ophthalmology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - OBGYN</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Neurosurgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Neurology</u></a>	MD Coder PPC download includes the MD Coder PC	\$279.00	2004-10-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.		
<a href="#"><u>MD Coder PocketPC - Nephrology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Internal Medicine</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - General Surgery</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Gastroenterology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>LNDG05™</u></a>	Updated for 2005 with more than 800 complete drug entries, this PDA reference provides instant access to all the drug information nurses need in day-to-day practice.	\$44.95	2004-10-08
<a href="#"><u>MD Coder PocketPC - Family Practice</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it	\$279.00	2004-10-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	for free.		
<a href="#"><u>MDCoder PocketPC - Facial Plastic</u></a>	MD Coder PPC download includes the MD Coder PC application & all 25 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>MD Coder PocketPC - Cardiology</u></a>	MD Coder PPC download includes the MD Coder PC application & all 20 PocketPC Specialities. Choose your speciality to install. A complete Charge Capture solution. Try it for free.	\$279.00	2004-10-08
<a href="#"><u>FitnessPlus for Windows Mobile Suite</u></a>	Most Comprehensive and Powerful Diet and Exercise Tracking Tool for Window Mobile Device! Free Desktop Application included!	\$19.95	2004-10-08
<a href="#"><u>First Aid Plus</u></a>	Medical emergencies dont occur every day when they do you need to deal, gives FIRST AID Tips for many MISHAPS and some life saving instructions! Youll definitely love it.	\$7.99	2004-10-08
<a href="#"><u>NDH05™ (Nursing2005 Drug Handbook)</u></a>	Leading nursing drug reference with the latest information on over 1,000 generic and 3,500 brand-name drugs.	\$44.95	2004-10-08
<a href="#"><u>RNDxInt9™</u></a>	Helps nursing students identify interventions most commonly associated with nursing diagnoses when caring for patients.	\$32.95	2004-10-08
<a href="#"><u>Food &amp; Nutrition Guide</u></a>	Enhance your diet to improve your health and reduce the risk of heart disease and cancer.	\$4.95	2004-10-08
<a href="#"><u>HealthPack+</u></a>	A tool to make sure you are FIT and Healthy.Contains more than 20 Modules including BP,weight,Gulcose tracker and BMI calculator and Much more	\$14.95	2004-09-18
<a href="#"><u>Fertility calendar</u></a>	Fertility calculator predicts menstruation and fertility cycles.	\$14.95	2004-09-18

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	Based on algorithm from Feminist Womens Health Center and papers from National Institutes of Health.		
<a href="#"><u>PEPID PRIMARY CARE PLUS Physician Suite</u></a>	The only "all-in-one" fully integrated physician reference software.	\$139.95	2004-09-18
<a href="#"><u>PEPID PRIMARY CARE PLUS Physician Suite</u></a>	The only "all-in-one" fully integrated physician reference software.	\$139.95	2004-09-18
<a href="#"><u>PEPID RN+ONS Oncology Nursing</u></a>	Introducing the PEPID RN+ONS Suite developed in partnership with the Oncology Nursing Society.	\$139.95	2004-09-18
<a href="#"><u>PEPID RN+ONS Oncology Nursing</u></a>	Introducing the PEPID RN+ONS Suite developed in partnership with the Oncology Nursing Society.	\$139.95	2004-09-18
<a href="#"><u>Natural Standard - 1 Year Subscription</u></a>	Natural Standard for Pocket PC	\$59.95	2004-09-18
<a href="#"><u>BartlettID04™</u></a>	Written by noted authority Dr. John Bartlett, this practical reference on PDA covers all relevant aspects of antibiotics.	\$29.95	2004-09-18
<a href="#"><u>PoisonOD™</u></a>	The best manual on the diagnosis and treatment of poisoning and drug overdose.	\$44.95	2004-09-11
<a href="#"><u>EmergAir™</u></a>	Offers step-by-step instructions on techniques, drug administration, and prevention and management of complications and includes extensive coverage of difficult clinical scenarios.	\$49.95	2004-09-11
<a href="#"><u>My temperature tracker</u></a>	Track your body temperature when you are ill and monitor its variance. The software supports and automatically recognizes both Fahrenheit and Celsius units.	\$2.80	2004-09-11
<a href="#"><u>My medications scheduler</u></a>	Create a complete register of all medications you take and establish a treatment program including their dosage and frequency. Reminder included.	\$3.90	2004-09-11

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>My doctors appointments</u></a>	Create an address book and appointments schedule including all doctors you come into contact with. You can use a reminder function and import contacts.	\$3.20	2004-09-11
<a href="#"><u>My blood pressure tracker</u></a>	The program is focused on fast data entry and convenient summaries of your Blood Pressure and pulse rates.	\$4.80	2004-09-11
<a href="#"><u>Med Trakker</u></a>	A PDA medical history record keeper for the whole family.	\$9.95	2004-09-11
<a href="#"><u>Terrorism: The Medical Response 2005</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$6.95	2004-09-11
<a href="#"><u>Personal Health Tracker</u></a>	With PHT you can track your medicine intake, blood pressure, pulse, temperature variance and organize your check up appointments.	\$8.69	2004-09-11
<a href="#"><u>PCProc™</u></a>	A convenient how-to guide to more than 70 medical procedures most commonly performed in an office setting.	\$89.95	2004-09-11
<a href="#"><u>OBGRecall™</u></a>	Facilitates rapid review and memorization of the key concepts encountered during the OB/GYN rotation with a concise question-and-answer format.	\$32.95	2004-09-11
<a href="#"><u>CancerPRA™</u></a>	Information to help you reach your patients with up-to-date, engaging messages about how they can lower their cancer risk.	\$39.95	2004-09-01
<a href="#"><u>MedCalc 3000 Pocket PC</u></a>	MedCalc 3000 Pocket PC is the handheld version of the most popular medical calculator on the web. MedCalc 3000 has hundreds of equations, criteria sets, decision trees and more.	\$34.95	2004-09-01
<a href="#"><u>Health Master</u></a>	Complete HealthCare Tool which includes 20 modules. Extensive tools, Exports with Desktop Backup, Password Protection, Reminders, Color Settings, Calculator, BP tracker and more.	\$9.99	2004-09-01

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>RNFastFacts3™</u></a>	A compilation of all of those hard-to-remember procedures, calculations, lab values, and interactions.	\$28.95	2004-09-01
<a href="#"><u>USMLE S2™</u></a>	Provides essential questions and answers covering topics that have appeared on recent Step II exams.	\$31.95	2004-09-01
<a href="#"><u>WillsEye4™</u></a>	Clinicians will have instant access to current information on diagnosis and treatment of all eye disorders.	\$59.95	2004-08-23
<a href="#"><u>USMLE-S1™</u></a>	This quick, easy-to-use review helps students get prepared for Step One of the USMLE.	\$34.95	2004-08-23
<a href="#"><u>PCGuides™</u></a>	The most current clinical practice guidelines in primary care.	\$19.95	2004-08-23
<a href="#"><u>DietOrganizer Pocket</u></a>	Diet Organizer Pocket is an easy to use yet powerful food and exercise diet diary.	\$25.00	2004-08-23
<a href="#"><u>Pkt Medical Calculator-SH3(new)</u></a>	A Complete collection of 150+ MedicalCalculators & 23+ medical criterias.No need to remember complicated formulas.Transform your handheld into a powerful medical Calculation tool.	\$45.00	2004-08-05
<a href="#"><u>smartVenus for Pocket PC - Mips</u></a>	A personal ovulation calendar and family planning tool for women	\$5.00	2004-08-05
<a href="#"><u>Vaccines™</u></a>	Practical, up-to-date guidelines on proper use of vaccines and helps clinicians answer the many questions asked by patients and parents.	\$49.95	2004-08-05
<a href="#"><u>Surgical Intern Pocket Survival Guide</u></a>	The Surgical Intern Pocket Survival Guide for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>The EKG Pocket Survival Guide</u></a>	The EKG Pocket Survival Guide for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>Oncology Intern Pocket Survival Guide</u></a>	The Oncology Intern Pocket Survival Guide for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>The CCU Intern Pocket Survival Guide</u></a>	The CCU Intern Pocket Survival Guide for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>The Intern Pocket Survival</u></a>	The Intern Pocket Survival	\$14.00	2004-08-05



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Guide</u></a>	Guide		
<a href="#"><u>The ACLS Pocket Survival Guide</u></a>	The ACLS Pocket Survival Guide for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>Gynecological Pearls</u></a>	Gynecological Pearls for Pocket PC	\$29.95	2004-08-05
<a href="#"><u>American Psychiatric Asso. Guidelines</u></a>	American Psychiatric Association Practice Guidelines for Pocket PC	\$89.95	2004-08-05
<a href="#"><u>Davis Guide to IV Medications</u></a>	Davis Guide to IV Medications for Pocket PC	\$49.95	2004-08-05
<a href="#"><u>Obstetrical Pearls</u></a>	Obstetrical Pearls for Pocket PC	\$29.95	2004-08-05
<a href="#"><u>Surgical Pearls</u></a>	Surgical Pearls for Pocket PC	\$29.95	2004-08-05
<a href="#"><u>A Pocketful Of Prevention</u></a>	A Pocketful Of Prevention for Pocket PC	\$14.00	2004-08-05
<a href="#"><u>The Merck Manual of Geriatrics</u></a>	The Merck Manual of Geriatrics for Pocket PC	\$74.99	2004-08-05
<a href="#"><u>A-Z Drug Facts and Comparisons</u></a>	A to Z Drug Facts from Facts and Comparisons for Pocket PC	\$75.00	2004-08-05
<a href="#"><u>Nursing Care Plans</u></a>	Nursing Care Plans for Pocket PC	\$45.00	2004-08-05
<a href="#"><u>The 5 Minute Emergency Medicine Consult</u></a>	The 5 Minute Emergency Medicine Consult for Pocket PC	\$64.95	2004-08-05
<a href="#"><u>5-Minute Infectious Diseases Consult</u></a>	The 5-Minute Infectious Diseases Consult for Pocket PC	\$64.95	2004-08-05
<a href="#"><u>Tabers Cyclopedic Medical Dictionary</u></a>	Tabers Cyclopedic Medical Dictionary for Pocket PC	\$49.95	2004-08-05
<a href="#"><u>Bones Flash Cards</u></a>	This product is designed to guide users through the entire human skeletal system, from head to toe.	\$29.99	2004-08-05
<a href="#"><u>DSM-IV: Text Revision</u></a>	DSM-IV: Text Revision for Pocket PC	\$59.95	2004-08-05
<a href="#"><u>5 Minute Pediatric Consult</u></a>	5 Minute Pediatric Consult for Pocket PC	\$64.95	2004-08-05
<a href="#"><u>Physicians Drug Handbook</u></a>	Physicians Drug Handbook for Pocket PC	\$75.00	2004-08-05
<a href="#"><u>PsychThrp™</u></a>	clinicians can instantly access the most up-to-date, authoritative guidelines for diagnosing and treating the full range of psychiatric disorders.	\$49.95	2004-08-05
<a href="#"><u>The Merck Manual: Centennial Edition</u></a>	Merck Manual: Centennial Edition for Pocket PC	\$79.95	2004-08-05
<a href="#"><u>CVMstat</u></a>	CVMstat for PocketPC	\$79.95	2004-08-05
<a href="#"><u>Griffiths 5-Minute Clinical</u></a>	5-Minute Clinical Consult for	\$59.95	2004-08-05

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Consult</u></a>	Pocket PC		
<a href="#"><u>RxDrugs™ (AHFS Dosing Companion)</u></a>	One-of-a-kind handheld version of the extensively referenced, evidence-based dosing statements prepared by professional editorial staff.	\$39.00	2004-07-28
<a href="#"><u>LabTests™</u></a>	A best-selling clinical reference on laboratory and diagnostic tests for quick, easy point-of-care access.	\$42.95	2004-07-28
<a href="#"><u>Woman Plus</u></a>	Woman Plus - your personal cycle tracking system! Organize yourself better!	\$14.95	2004-07-20
<a href="#"><u>StudyBuilder Enterprise Edition</u></a>	Database software for audit, clinical trials, registries and patient management via the Internet!	\$4,999.00	2004-07-20
<a href="#"><u>StudyBuilder Professional Edition</u></a>	Database software for audit, clinical trials, registries and patient management.	\$1,499.00	2004-07-20
<a href="#"><u>StudyBuilder Personal Edition</u></a>	Database software for audit, clinical trials, registries and patient management	\$499.00	2004-07-20
<a href="#"><u>StudyBuilder Student Edition</u></a>	Database software for audit, clinical trials, registries and patient management for students	\$149.00	2004-07-20
<a href="#"><u>EBCard™</u></a>	An indispensable decision-making aid for all physicians who treat cardiovascular disease.	\$89.95	2004-07-09
<a href="#"><u>RxAllergies™</u></a>	A quick guide to drug allergies and drug reactions for anyone prescribing medications.	\$49.95	2004-07-09
<a href="#"><u>MGHCC™</u></a>	Presents hospital-tested protocols that reflect today's most advanced critical care practices.	\$49.95	2004-06-30
<a href="#"><u>Pkt Medical Calculator-PPC/2002/2003</u></a>	A Complete collection of 150+ MedicalCalculators & 23+ medical criterias.No need to remember complicated formulas.Transform your handheld into a powerful medical Calculation tool.	\$45.00	2004-06-30
<a href="#"><u>GymMate</u></a>	Get your fitness schedule organized with GymMate for	\$9.99	2004-06-30

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	PocketPC!		
<a href="#"><u>SurgOnco™</u></a>	From the world-renowned M.D. Anderson Cancer Center, this reference is a practical guide to established surgical oncology principles for each organ system.	\$52.95	2004-06-30
<a href="#"><u>NDisCheck™</u></a>	Designed for quick reference at the nurses station, this reference presents succinct, bulleted information on 450 diseases.	\$44.95	2004-06-30
<a href="#"><u>Maxillofacial Trauma Database</u></a>	Oral and Maxillofacial Trauma Database and Patient Tracker	\$38.00	2004-06-30
<a href="#"><u>Dorlands2™</u></a>	Based on the "gold standard" of the medical community, Dorlands Pocket Medical Dictionary covers the must-know vocabulary.	\$39.95	2004-06-30
<a href="#"><u>PubMed on Tap</u></a>	PubMed on Tap is an application for PDAs that retrieves MEDLINE® citations directly from the PDA through a wireless connection to the Internet.	freeware	2004-06-30
<a href="#"><u>NursDiag™</u></a>	A quick reference to nursing diagnosis and can be used as a supplement for any nursing diagnosis text.	\$32.95	2004-06-30
<a href="#"><u>FMS Impact PocketPC</u></a>	Complete the fibromyalgia syndrome impact questionnaire repeatedly over time. The software generates a graph of your test result history.	\$14.95	2004-06-19
<a href="#"><u>Midnight Medicine</u></a>	Midnight Medicine: a quick-reference to assist primary care physicians and house staff in managing common medical emergencies.	\$29.99	2004-06-19
<a href="#"><u>Ultimate Organ Systems Flash Cards</u></a>	This product examines the structures and functions of the entire human body with 244 high resolution images.	\$99.99	2004-06-19
<a href="#"><u>WashMnl31™</u></a>	The industry gold standard for over 40 years providing authoritative daily guidance for treating your patients.	\$59.95	2004-06-19
<a href="#"><u>ClinRx Pocket PC</u></a>	ClinRx is a creatinine clearance	freeware	2004-06-09

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	calculator for pharmacists, physicians and other health care providers.	e	
<a href="#"><u>ACPPier™</u></a>	The authority in evidence-based guidance for clinicians designed for rapid point-of-care delivery on the diagnosis and treatment of diseases.	\$99.00	2004-06-09
<a href="#"><u>NurProc™</u></a>	Gives nurses instant access to step-by-step instructions for more than 500 procedures.	\$49.95	2004-06-09
<a href="#"><u>AMStedman™</u></a>	The essential reference work for everyone concerned with medicine and health today.	\$27.00	2004-06-09
<a href="#"><u>NatMed04™</u></a>	Natural Medicines Comprehensive Database 2004 gives you everything you want to know about herbs, vitamins, minerals, supplements.	\$92.00	2004-06-09
<a href="#"><u>Tabers Cyclopedic Medical Dictionary</u></a>	Tabers Cyclopedic 19th edition is a leading medical dictionary with over 50,000 entries.	\$48.99	2004-06-09
<a href="#"><u>Special Senses Anatomy Flash Cards</u></a>	The Special Senses System examines the structures and functions of the five human senses.	\$19.99	2004-06-09
<a href="#"><u>Lymphatic System Anatomy Flash Cards</u></a>	The Lymphatic System examines the structures and functions of the lymph vessels through the body.	\$19.99	2004-06-09
<a href="#"><u>Integument System Anatomy Flash Cards</u></a>	The Integument System examines the structures and functions of the bodys surface, the skin.	\$19.99	2004-06-09
<a href="#"><u>AnesRev™</u></a>	This is the first comprehensive anesthesia review for PDAs and is the perfect study aid for written and oral board exams.	\$59.95	2004-06-09
<a href="#"><u>EMonCall™</u></a>	Assists in the initial evaluation and treatment of the most frequently encountered problems in emergency medicine, both common and potentially life-threatening.	\$44.95	2004-05-31
<a href="#"><u>Relax - Nature sounds and</u></a>	Music to reduce and manage	\$5.00	2004-05-31

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Piano Music</u></a>	Stress, Anxiety and Depression. Ultra relax music and nature sounds in wma format for you can ear in your Pocket Pc or in you Desktop Pc.		
<a href="#"><u>Clin-eRx04™</u></a>	Revised annually, this quick access guide covers more than 1,000 of the most commonly used medications.	\$19.95	2004-05-31
<a href="#"><u>IdentADrg4™</u></a>	Ident-A-Drug™ gives you quick accurate identification of oral tablets and capsules used in North America by the identification code imprinted on all medications.	\$39.50	2004-05-31
<a href="#"><u>HSCPeds™</u></a>	A practical guide for diagnosis and management of pediatric patients in primary, secondary, and tertiary care.	\$54.95	2004-05-20
<a href="#"><u>CardioDxTx™</u></a>	Only the essential information needed to diagnose and manage patients with cardiac diseases.	\$29.95	2004-05-20
<a href="#"><u>Endocrine System Anatomy Flash Cards</u></a>	The Endocrine System examines the structures and functions of glands through the entire body.	\$19.99	2004-05-20
<a href="#"><u>Pocket Homeopath</u></a>	Homeopathic software for those new to homeopathy.	\$24.95	2004-05-20
<a href="#"><u>MedicalEncyclopedia [MIPS] PktPC(New)</u></a>	Medical Encyclopedia have become another invaluable tool available on the Pocket PC. Over 55,000 + Entries defining and explaining the major medical terms,Diseases, & Human parts,FirstAid etc.,	\$35.00	2004-05-20
<a href="#"><u>FryesRN5™</u></a>	This unique preparation tool helps students prepare for the exam by presenting key facts in random order.	\$24.95	2004-05-20
<a href="#"><u>MedicalEncyclopedia[SH3]PktPC/2002/2003</u></a>	Medical Encyclopedia have become another invaluable tool available on the Pocket PC. Over 55,000 + Entries defining and explaining the major medical terms,Diseases, & Human parts,FirstAid etc.,	\$35.00	2004-05-20

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Urinary System Anatomy Flash Cards</u></a>	The Urinary System examines the structures and functions of the entire urinary system.	\$19.99	2004-05-16
<a href="#"><u>PedsSx™</u></a>	This practical guide helps clinicians streamline pediatric diagnosis with a comprehensive, integrated, logical approach to analysis of symptoms and signs.	\$54.95	2004-05-16
<a href="#"><u>ClinicalMed™</u></a>	The ideal reference for students throughout their clinical studies.	\$39.95	2004-05-16
<a href="#"><u>Respiratory System Anatomy Flash Cards</u></a>	The Respiratory System examines the structures and functions of the entire respiratory system.	\$19.99	2004-05-16
<a href="#"><u>OncoMd04™</u></a>	Completely revised and updated for 2004, this practical handbook is an up-to-date guide to all aspects of cancer chemotherapy.	\$69.95	2004-05-16
<a href="#"><u>Muscles Database</u></a>	Handbase Database of all muscles, origins, insertions, actions, nerve and vascular supply for the whole body.	\$15.00	2004-05-16
<a href="#"><u>Nerves Database</u></a>	HanDbase database of all nerves in body, their source, branches, whether they are motor, sensory or both, etc.	\$10.00	2004-05-16
<a href="#"><u>HealthFile Plus</u></a>	Includes PC Companion! Best-selling personal health and medical records software. Store appointments, allergies, weight, etc.	\$29.99	2004-05-16
<a href="#"><u>OslerHbk™</u></a>	Covers all of the essential topics encountered in the daily practice—written by contributors from the Johns Hopkins Hospital.	\$49.95	2004-05-16
<a href="#"><u>CarboCounter for Pocket PC</u></a>	CarboCounter keeps your low carb diet on track!	\$14.95	2004-05-16
<a href="#"><u>BurnScore (english version)</u></a>	BurnScore is a software for evaluate the severity of a burned patient, calculating the percentage of body surface area burned and the probability of survival.	\$10.00	2004-05-16
<a href="#"><u>NonSmokers Clock</u></a>	NonSmokers Clock is a Pocket	\$2.99	2004-05-16

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	PC software that help you to quit smoking.		
<a href="#"><u>BurnScore (spanish version)</u></a>	BurnScore permite hacer una rápida valoración al paciente quemado, cuantificando la superficie quemada y valorando su pronóstico.	\$10.00	2004-05-03
<a href="#"><u>Nervous System Anatomy Flash Cards</u></a>	The Nervous System examines the structures and functions of the entire nervous system.	\$19.99	2004-05-03
<a href="#"><u>5mNeuro™</u></a>	The perfect on-the-spot reference guide for neurologic symptoms and disease.	\$79.95	2004-05-03
<a href="#"><u>NeuroHB™</u></a>	See vital information on specific signs and symptoms, diagnostic tests, and the gamut of neurologic conditions.	\$59.95	2004-05-03
<a href="#"><u>FerriCA04™</u></a>	The fast, efficient way to access the important diagnostic and therapeutic information you need every day!	\$64.95	2004-05-03
<a href="#"><u>OncoRn04™</u></a>	A comprehensive nursing resource for assessment, intervention, and patient education in the administration of oncology drugs.	\$49.95	2004-05-03
<a href="#"><u>AcuPoints 3.0 (ARM, XScale)</u></a>	AcupunctureSoftware for Professionals, Interns, & Students: Point locations, Notes area, Diagnosis / Treatment area, Body Measurement Pictures, Special Points, etc.	\$79.99	2004-05-03
<a href="#"><u>Reproductive System Anatomy Flash Cards</u></a>	The Reproductive System examines the structures and functions of both the male and female systems.	\$19.99	2004-05-03
<a href="#"><u>Risk™</u></a>	An indispensable and timely guide, Risk is the authority for assessing threats to your health and safety.	\$16.00	2004-05-03
<a href="#"><u>MedTests™</u></a>	A comprehensive guide to hundreds of the most commonly performed medical diagnostic tests.	\$40.00	2004-05-03
<a href="#"><u>PregRx™</u></a>	Have dosing advice and drug	\$79.95	2004-05-03

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	interaction information for your pregnant and lactating patients in the palm of your hand!		
<a href="#"><u>WUCGastro™</u></a>	This handy quick reference is a current and easily accessible guide to the common problems that a gastroenterologist encounters on a daily basis.	\$39.95	2004-05-03
<a href="#"><u>NPAdults2™</u></a>	Developed by clinical experts to provide fast and easy access to information needed to provide comprehensive care to adult patients in the primary care setting.	\$59.95	2004-05-03
<a href="#"><u>Weight Loss</u></a>	Get the facts about weight loss and take an active approach to your health. Successful weight loss means making changes to your eating and activity habits that you can maintain for life.	\$10.00	2004-05-03
<a href="#"><u>PsychRecall™</u></a>	Facilitates rapid review and memorization of the key concepts encountered during the psychiatry rotation with a concise question-and-answer format.	\$32.95	2004-05-03
<a href="#"><u>smartVenus for Pocket PC - SH3</u></a>	A personal ovulation calendar and family planning tool for women	\$10.00	2004-05-03
<a href="#"><u>WUCGMed™</u></a>	Prepared by residents, fellows, and attending physicians, this handy reference is a practical guide to the general internal medicine consult.	\$39.95	2004-05-03
<a href="#"><u>HandyHeart</u></a>	Free tool for anyone interested in cardiology healthcare. Includes utilities covering lipid management, hypertension, and nearly all cardiovascular medications.	freeware	2004-04-25
<a href="#"><u>HandyRef</u></a>	Free general medicine reference tool for Pocket PC's for medical students, residents, and anyone else working in medicine. Includes utilities for DKA	freeware	2004-04-25



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	Management, Narcotic Dose Equivalencies, Insulin Sliding Scales, Mini-Mental Status Exam, and the G		
<a href="#">Clinical Pediatrics</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$10.95	2004-04-13
<a href="#">PMRRx™</a>	A handy quick-reference tool for busy residents and clinicians with key facts and points essential for day-to-day patient care	\$39.95	2004-04-13
<a href="#">Cardiovascular Anatomy Flash Cards</a>	Cardiovascular Anatomy Flash Cards is designed to effectively demonstrate the heart, veins, and arteries of the cardiovascular system.	\$19.99	2004-04-13
<a href="#">Complete Dental Reference-PPC/2002/2003</a>	A Complte Knowledge Pack Reference utility for Dentists. More than 50 + topics defining A-z of Dental Terms, Anatomy, Oral Pathology and more ., A must tool for every dentists to students.	\$20.00	2004-04-13
<a href="#">Muscles Anatomy Flash Cards</a>	Muscles Anatomy Flash Cards is designed to illustrate every functional muscle of the human body from the shoulder girdle down.	\$29.99	2004-04-13
<a href="#">Immunizations &amp; Vaccinations Calendar</a>	Get vital information about when to get immunizations & vaccinations, and how they work.	freeware	2004-04-13
<a href="#">RadProc™</a>	This PDA version of the RadProc covers all current procedures--from venous access techniques and embolizations to stent-grafts and carbon dioxide angiography.	\$59.95	2004-04-04
<a href="#">Clinical Psychiatry</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-04-04
<a href="#">Calories Burned Calculator</a>	How many calories are burnt during exercise? Use this calculator to find out how many	\$1.99	2004-04-04

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	calories are lost during your exercise routines.		
<a href="#">Clinical Gastroenterology</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-04-04
<a href="#">NoDip (for PocketPC)</a>	NoDip is a 5 Step program designed to help you quit smokeless tobacco.	\$24.95	2004-04-04
<a href="#">NpWomens™</a>	An enlightening clinical reference for students and clinicians working in women's health.	\$59.95	2004-04-04
<a href="#">RNLabs4™</a>	Detailed overviews of physiology to help students think critically and understand the results of laboratory and diagnostic tests and their implications for therapy.	\$45.95	2004-04-04
<a href="#">Clinical Allergy &amp; Immunology</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$8.95	2004-04-04
<a href="#">MedicalEncyclopedia[new] PktPC/2002/2003</a>	Medical Encyclopedia have become another invaluable tool available on the Pocket PC. Over 55,000 + Entries defining and explaining the major medical terms,Diseases, & Human parts,FirstAid etc.,	\$35.00	2004-04-04
<a href="#">Clinical Nephrology</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.99	2004-04-04
<a href="#">Clinical Urology</a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$8.99	2004-04-04
<a href="#">MySportTraining Polar</a>	Download workouts from your Polar® S-series heart rate monitors right into your PocketPC using this extension to the award-winning MySportTraining for PocketPC.	\$8.95	2004-04-04
<a href="#">CACHemoRx™</a>	On-the-spot guide to the use of chemotherapy for specific cancers.	\$49.95	2004-04-04
<a href="#">PedsRecall™</a>	Designed for easy access and study in a rapid-fire question-	\$32.95	2004-04-04

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	and-answer format for medical students on pediatric clerkships.		
<a href="#"><u>5mVetCF™</u></a>	Authoritative answers to all your questions about clinical problems frequently encountered in practice.	\$89.00	2004-04-04
<a href="#"><u>ClinTrials™</u></a>	Designed to synthesize current cardiovascular research findings for busy physicians and healthcare professionals.	\$69.95	2004-04-04
<a href="#"><u>Clinical Womens Health</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-04-04
<a href="#"><u>Clinical Rheumatology &amp; Pain</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-04-04
<a href="#"><u>Tarascon Pediatric Emergency Pocketbook</u></a>	Tarascon Pediatric Emergency Pocketbook has 100% of the venerable content of this extremely popular pocket reference.	\$29.99	2004-04-04
<a href="#"><u>Dosimetry Tables</u></a>	Dosimetry Tables for radiation therapy	\$24.95	2004-04-04
<a href="#"><u>Medical Encyclopedia[new] PktPC/2002/2003</u></a>	Medical Encyclopedia have become another invaluable tool available on the Pocket PC. Over 55,000 + Entries defining and explaining the major medical terms, Diseases, & Human parts, First Aid etc.,	\$35.00	2004-03-18
<a href="#"><u>Clinical Nephrology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.99	2004-03-18
<a href="#"><u>Clinical Urology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$8.99	2004-03-18
<a href="#"><u>MySportTraining Polar</u></a>	Download workouts from your Polar® S-series heart rate monitors right into your PocketPC using this extension to the award-winning MySportTraining for PocketPC.	\$8.95	2004-03-18
<a href="#"><u>CAChemoRx™</u></a>	On-the-spot guide to the use of chemotherapy for specific cancers.	\$49.95	2004-03-18

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>PedsRecall™</u></a>	Designed for easy access and study in a rapid-fire question-and-answer format for medical students on pediatric clerkships.	\$32.95	2004-03-18
<a href="#"><u>5mVetCF™</u></a>	Authoritative answers to all your questions about clinical problems frequently encountered in practice.	\$89.00	2004-03-18
<a href="#"><u>ClinTrials™</u></a>	Designed to synthesize current cardiovascular research findings for busy physicians and healthcare professionals.	\$69.95	2004-03-18
<a href="#"><u>Clinical Womens Health</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-03-18
<a href="#"><u>Clinical Rheumatology &amp; Pain</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.95	2004-03-18
<a href="#"><u>Tarascon Pediatric Emergency Pocketbook</u></a>	Tarascon Pediatric Emergency Pocketbook has 100% of the venerable content of this extremely popular pocket reference.	\$29.99	2004-03-18
<a href="#"><u>Dosimetry Tables</u></a>	Dosimetry Tables for radiation therapy	\$24.95	2004-03-18
<a href="#"><u>Diet Partner</u></a>	Dietary Intake and Exercise Tracking made easy!	\$19.95	2004-03-09
<a href="#"><u>Clinical ENT</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$8.99	2004-02-28
<a href="#"><u>Clinical Endocrinology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.99	2004-02-28
<a href="#"><u>IVDH8™</u></a>	Crucial details that make safe and effective administration of I.V. drugs possible are now just one tap away!	\$41.95	2004-02-28
<a href="#"><u>Critical Care &amp; Nutrition</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$11.95	2004-02-19
<a href="#"><u>Clinical Trauma and Toxicology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$14.95	2004-02-19
<a href="#"><u>ButtOut!</u></a>	ButtOut! is a Pocket PC application that is designed to	\$4.99	2004-02-10

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	encourage and help the user during the process of quitting smoking.		
<a href="#">HealthTrax</a>	Healthcare information on demand in the Palm of your hand!	freeware	2004-02-10
<a href="#">Harrisons™</a>	Referenced to the worlds best-selling internal medicine textbook, this handy reference provides on-the-spot answers to the problems you face daily.	\$59.95	2004-02-10
<a href="#">Nuvitec ICD10 Browser</a>	Der ICD10 Browser erleichtert Ihnen die Code- oder Textsuche nach ICD10 komformen Diagnosenbezeichnungen. Genauere Information: <a href="http://www.nuvitec.com/icd10browser.html">http://www.nuvitec.com/icd10browser.html</a>	\$11.00	2004-02-04
<a href="#">GNP3™</a>	Guide to Popular Natural Products includes 125 informative monographs covering the most popular herbal products.	\$19.95	2004-02-04
<a href="#">BreastCRA™</a>	Provides on-the-spot clinical guidelines for assessing and advising patients on their risk of breast cancer.	\$49.95	2004-02-04
<a href="#">WUHemOnc™</a>	This handy reference is a practical guide to the diagnosis and treatment of hematologic disorders and adult malignancies.	\$39.95	2004-02-04
<a href="#">NpPediatric™</a>	A concise manual to assist in their assessment, evaluation of signs and symptoms, and initiation of treatment of children and adolescents.	\$59.95	2004-02-04
<a href="#">NpGeriatric™</a>	A clinical resource for advanced practice nurses and students who are privileged to provide primary care to older adults.	\$59.95	2004-02-04
<a href="#">Infodev Diet Point Calculator</a>	An easy to use software takes calories, fat, and fiber, and calculates the diet points using accurate method.	\$1.51	2004-02-04

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Clinical Orthopedics</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$10.95	2004-02-04
<a href="#"><u>NutriMed (spanish version)</u></a>	Calcula facil y rápidamente los requerimientos energéticos para los pacientes que precisan nutrición enteral o parenteral.	\$11.99	2004-01-31
<a href="#"><u>SiDiary</u></a>	Free diabetes management software for PocketPC and windows.	freeware	2004-01-31
<a href="#"><u>DietCalc (All processors)</u></a>	DietCalcPPC version 1.0 is a program that allows Pocket PC users to calculate various Diet/Health items.	\$6.99	2004-01-31
<a href="#"><u>Clinical Neurology</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$11.99	2004-01-31
<a href="#"><u>Health Calculator</u></a>	11 Most Vital Health Calculations with Specifications to analyze your Health. Automatic Calculation with HTML/Text/CSV Backup. Supports both Imperial & Metric form of Calculation.	\$2.00	2004-01-31
<a href="#"><u>NutriMed (english version)</u></a>	Calculate easily and quickly the energy requirements for patients who need enteral or parenteral nutrition.	\$11.99	2004-01-27
<a href="#"><u>SurgRecall™</u></a>	SurgRecall™ (Surgical Recall, 3rd Ed.)Designed for easy access and study in a rapid-fire question-and-answer format for medical students on surgical clerkships.	\$34.95	2004-01-27
<a href="#"><u>MedRecall™</u></a>	MedRecall™ (Medicine Recall, 2nd Ed.)Written primarily for third and fourth year medical students, it covers the core clinical specialty areas within internal medicine.	\$32.95	2004-01-27
<a href="#"><u>Healthy Living in the 21st Century</u></a>	Why all the fuss about diet and exercise? The majority of adults are overweight or obese. The prevalence of overweight adults has increased from 31% to 64%	freeware	2004-01-27

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	in the last four decades. The ...		
<a href="#"><u>Personal Health &amp; Diet Manager</u></a>	Full Desktop & Pocket PC Editions. Track all your health, diet and fitness information. Full diet and exercise tracker, nutrition database, medical records and much more.	\$24.95	2004-01-27
<a href="#"><u>The Clinical Medicine Consult</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$49.95	2004-01-27
<a href="#"><u>Procedures in Medicine</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$16.95	2004-01-27
<a href="#"><u>APACHE2 (english version)</u></a>	The APACHE II score is a general measure of disease severity based on physiologic measurements and previous health condition.	\$17.99	2004-01-27
<a href="#"><u>APACHE2 (spanish version)</u></a>	El APACHE II es uno de los sistemas más empleados para cuantificar la gravedad de un paciente.	\$17.99	2004-01-27
<a href="#"><u>RNotes™</u></a>	Anything you could ever need to know for nursing school is all right here in this clinical "need-to-know" reference for educators, students, and nurses.	\$25.95	2004-01-27
<a href="#"><u>WUCRheum™</u></a>	A practical guide to inpatient and outpatient rheumatology consultations.	\$39.95	2004-01-27
<a href="#"><u>WashOnco™</u></a>	Written by expert contributors, this hands-on resource provides quick and reliable access to the latest guidelines for cancer management.	\$49.95	2004-01-27
<a href="#"><u>NutrDx™</u></a>	The perfect rapid-access resource for busy nutritionists and dieticians and is ideally suited for labs and clinical rotations.	\$59.95	2004-01-27
<a href="#"><u>LNDG04™</u></a>	Provides instant access to all the drug information nurses need in day-to-day practice.	\$44.95	2004-01-27
<a href="#"><u>WUSSurg™</u></a>	Provides all the essential information that every surgery	\$29.95	2004-01-27

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	intern needs from Day 1 on the wards.		
<a href="#"><u>WUSPeds™</u></a>	Encapsulates the critical knowledge essential for a successful pediatric residency.	\$29.95	2004-01-27
<a href="#"><u>WUSOut™</u></a>	Provides all the essential information that every intern needs from Day 1 in the outpatient clinic.	\$29.95	2004-01-27
<a href="#"><u>WUSOBG™</u></a>	Provides all the essential obstetrics and gynecology information that every intern needs from Day 1 on the wards.	\$29.95	2004-01-27
<a href="#"><u>WUSNeuro™</u></a>	Provides all the essential information that every intern needs from Day 1 on the wards, including the neurologic history and physical examination, a neuroanatomy review and more.	\$29.95	2004-01-27
<a href="#"><u>WUCCardio™</u></a>	This handy quick reference is a pragmatic guide to the pathophysiology, diagnosis, and management of cardiovascular disease.	\$39.95	2004-01-27
<a href="#"><u>MnlCrd5™</u></a>	On the wards, on rounds, or at the bedside, clinicians can instantly access guidelines for the immediate & long-term medical & surgical management of all cardiovascular disorders.	\$49.95	2004-01-27
<a href="#"><u>Calories Burned During Sex</u></a>	If you like exercise, you will like this program.If you loathe to exercise, you will love this program!	\$3.49	2003-12-27
<a href="#"><u>BMI Calculator</u></a>	Calculate your body mass index based on your height and weight.	\$2.49	2003-12-27
<a href="#"><u>CTDrugs for HPC2000 (ARM)</u></a>	Drugs database tool for HPC2000.	\$5.00	2003-12-27
<a href="#"><u>Ultimate Drug Guide</u></a>	This drug reference remarkably contains the entire content of the Davis s Drug Guide, including integrated calculators.	\$49.99	2003-12-27
<a href="#"><u>Handy patients personal edition (SH3)</u></a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$198.00	2003-12-11



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Handy patients professional Ed (SH3)</u></a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$298.00	2003-12-11
<a href="#"><u>Handy patients personal edition (Mips)</u></a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$198.00	2003-12-11
<a href="#"><u>Handy patients professional Ed (Mips)</u></a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$298.00	2003-12-11
<a href="#"><u>BP Tracker for Pocket PC 2000</u></a>	Tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word/CSV Exports. 11 types of DateRanges to track BP, Statistics & Export. For Doctors/Patients.	\$9.97	2003-12-11
<a href="#"><u>BP Tracker for Pocket PC 2002</u></a>	Tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word/CSV Exports. 11 types of DateRanges to track BP, Statistics & Export. For Doctors/Patients.	\$9.97	2003-12-11
<a href="#"><u>BP Tracker for Pocket PC 2003</u></a>	Tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word/CSV Exports. 11 types of DateRanges to track BP, Statistics & Export. For Doctors/Patients.	\$9.97	2003-12-11
<a href="#"><u>CommDis™</u></a>	The first text on communicable diseases and infection control designed specifically for the pre hospital care provider.	\$36.20	2003-12-11
<a href="#"><u>TerrResp™</u></a>	This reference provides the basic information necessary for every emergency responder when combating terrorism.	\$20.20	2003-12-11
<a href="#"><u>PktEMT™</u></a>	This handy reference provides easy access to the vital emergency information needed by prehospital personnel.	\$30.67	2003-12-11
<a href="#"><u>PktResp™</u></a>	A must-have for every EMT-B and First Responder.	\$20.00	2003-12-11
<a href="#"><u>PainOrigin™</u></a>	This reference is about the first	\$39.50	2003-12-11

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	unifying law of Pain that explains the origin of all types of pain.		
<a href="#"><u>PHRnDG™</u></a>	A standard resource for nurses, this unique reference provides safe, effective, current, and accurate drug administration information right on your PDA.	\$49.95	2003-12-11
<a href="#"><u>WMDCare™</u></a>	The only text on this subject written by EMS providers for EMS providers, this is a comprehensive, up-to-date treatment of a rapidly emerging field.	\$28.40	2003-12-11
<a href="#"><u>WUCImmu™</u></a>	This handy quick reference outlines current concepts and practice guidelines in the rapidly evolving fields of allergy, asthma, and immunology.	\$39.95	2003-12-11
<a href="#"><u>EngSpan™</u></a>	This handy PDA reference presents English and Spanish translations of all medical terms and phrases used in clinician-patient interactions.	\$34.95	2003-12-11
<a href="#"><u>HbDxTests™</u></a>	Up-to-the-minute information on all current diagnostic procedures is just a click away.	\$41.95	2003-12-11
<a href="#"><u>RNDxTests™</u></a>	Used by nursing students at all levels as a textbook in theory classes for integrating laboratory and diagnostic data and in clinical settings as a quick reference.	\$43.95	2003-12-11
<a href="#"><u>Red Book™</u></a>	The indispensable one-stop guide to preventing, controlling, and managing infectious diseases in children.	\$99.95	2003-12-11
<a href="#"><u>PPEndo™</u></a>	Features a comprehensive compendium of endocrine drugs, laboratory values, and diagnostic tests.	\$49.95	2003-12-11
<a href="#"><u>ApplTher™</u></a>	Includes a comprehensive scope of areas as they relate to drug information, and covers such topics as dermatology,	\$55.00	2003-12-11

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	psychiatry, oncology, drug abuse, and more.		
<a href="#"><u>5mVetEq™</u></a>	Provides concise, practical, up-to-date information on almost all diseases and clinical problems in equine	\$94.00	2003-12-11
<a href="#"><u>smartVenus</u></a>	A personal ovulation calendar and family planning tool for women	\$10.00	2003-12-11
<a href="#"><u>ARTbeat by Skyscape</u></a>	ARTbeat, Skyscapes new FREE intelligent mobile offering	freeware	2003-12-11
<a href="#"><u>Track Ur BP for Pocket PC 2002 devices</u></a>	Track Ur BP, tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word Exports. 11 types of DateRanges to track BP, Statistics & Export.	\$5.95	2003-12-11
<a href="#"><u>Track Ur BP for PocketPC 2000 Devices</u></a>	Track Ur BP, tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word Exports. 11 types of DateRanges to track BP, Statistics & Export.	\$5.95	2003-12-11
<a href="#"><u>Track Ur BP for PocketPC 2003 devices</u></a>	Track Ur BP, tracks BP with Personal & Doctor details. Graphical & Statistical Comparison. HTML/Word Exports. 11 types of DateRanges to track BP, Statistics & Export.	\$5.95	2003-12-11
<a href="#"><u>Med-Score PPC 2002/2003</u></a>	Analiza crítica y objetivamente las publicaciones médicas.	freeware	2003-12-11
<a href="#"><u>Med-Score PPC 2000</u></a>	Analiza crítica y objetivamente las publicaciones médicas.	freeware	2003-12-11
<a href="#"><u>Clinical Pulmonology PC</u></a>	A medical reference text with detailed step-by-step procedures, work-ups and treatments.	\$9.99	2003-12-11
<a href="#"><u>Glasgow (spanish version)</u></a>	Calcula rápidamente la escala de coma de glasgow en los pacientes neurológicos.	freeware	2003-12-11
<a href="#"><u>Glasgow (english version)</u></a>	Calculate the Glasgow coma score in neurology.	freeware	2003-12-11
<a href="#"><u>5MCC4™</u></a>	A comprehensive and structured clinical resource that is one of the most respected sources of information for medical	\$64.95	2003-12-11

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	disorders.		
<a href="#">ER Basics</a>	An on-the-job guide for those working in an adult Emergency Department	\$20.00	2003-12-11
<a href="#">Handy patients upgrade to prof edition</a>	The upgrade from the personal edition to the professional one	\$100.00	2003-11-13
<a href="#">Handy patients prof edition (Arm)</a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$298.00	2003-11-13
<a href="#">Handy patients personal edition (Arm)</a>	Handy patients is a powerful and professional patient tracker for PocketPC	\$198.00	2003-11-13
<a href="#">RN Assistant for PPC 2003 OS</a>	The RN Assistant is your companion for everyday duty with customizable medical resource information.	\$14.95	2003-11-13
<a href="#">RN Assistant for PPC 2000, 2002 OS</a>	The RN Assistant is your companion for everyday duty with customizable medical resource information.	\$14.95	2003-11-13
<a href="#">Diet Tracker PPC</a>	Diet Tracker - its the easiest way to lose weight fast. This powerful and comprehensive weight loss program will help you beat the calorie temptation, containing an extensive 6000 item food database.	\$9.00	2003-11-08
<a href="#">Mediac Reference (ARM)</a>	A knowledge pack tool for Doctors / Medicine Students. All medical related abbreviations are listed.more than 12000 collection of data.	\$9.99	2003-11-08
<a href="#">Cancer-Diabetes Medical Reference (ARM)</a>	A Knowledge pack Reference utility for Pocket pc. Covers 10000 + Terms & Detailed Definitions, and A-z of Cancer,Diabetes,General MedicalTerms.A Handy useful medical tool to Students, Doctors.	\$19.99	2003-11-08
<a href="#">Diet and Health Calculator</a>	6 calculators:Calculate Calorie Burned, Basal Metabolic Rate, Daily Calorie Needs, Target Heart Rate, Body Mass Index and Body Fat.	\$4.99	2003-11-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Laboratory &amp; Diagnostic Tests</u></a>	LDT is the ideal reference for medical/nursing students, physician and nurses. This easy-to-consult product is useful as a clinical tool as well as a supportive text, with easy access to information.	\$43.95	2003-11-08
<a href="#"><u>Give Up Smooking (Pocket PC 2003)</u></a>	A new tool to help you to give up smoking!!	\$1.95	2003-10-30
<a href="#"><u>MAMA for PPC2003</u></a>	MAMA is a utility that organizes your Medline Abstracts and imports abstracts from Reference Manager or EndNote to let you view them offline anytime and anywhere.	\$59.95	2003-10-30
<a href="#"><u>File: Weight</u></a>	Record your weight data in the database. Make an overview of your weight about days and month.	\$6.50	2003-10-30
<a href="#"><u>Heybaby (for PocketPC)</u></a>	Baby on the way? Track your preganancy, daily info., baby names and more with Heybaby! FREE Trial	\$19.95	2003-10-30
<a href="#"><u>DxPreg™</u></a>	Instantly access reliable, practical information on over 1,000 pharmaceuticals and natural products that may be used by pregnant or lactating women.	\$59.95	2003-10-30
<a href="#"><u>WUSOtol™</u></a>	All the essential information that every intern needs from Day 1 on the wards, including an overview of the residency, a breakdown of common floor calls, consults, a typical daily routine and more.	\$29.95	2003-10-30
<a href="#"><u>LMNPPr™</u></a>	This PDA resource provides step-by-step guidelines for more than 100 procedures in all areas of nursing practice and contains many color images.	\$39.95	2003-10-19
<a href="#"><u>Cancerous Substance</u></a>	It appears that cancerous substance is real and something you will want to avoid. We have compiled a list of the major	\$4.99	2003-10-19

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	Cancerous and Noncancerous Substance.		
<a href="#">WUSPsych™</a>	This handy guide is a quick reference for the hospital practice of psychiatric medicine in the inpatient psychiatric, consultation, and emergency settings.	\$29.95	2003-10-10
<a href="#">Diabetes in Primary Care 2003</a>	Ultimate Diabetes PDA guide for healthcare providers	\$24.99	2003-10-10
<a href="#">MySportTraining Food</a>	The perfect extension to MySportTraining to track your food and maintain a balanced diet.	\$4.95	2003-09-24
<a href="#">1st Aid &amp; Emergencies (4ARM)</a>	Emergencies can happen everyday.	freeware	2003-09-24
<a href="#">1st Aid &amp; Emergencies (SH3)</a>	Emergencies can happen everyday.	freeware	2003-09-24
<a href="#">1st Aid &amp; Emergencies (MIPS)</a>	Emergencies can happen everyday.	freeware	2003-09-24
<a href="#">1st Aid &amp; Emergencies (ARM)</a>	Emergencies can happen everyday.	freeware	2003-09-24
<a href="#">PsychPharm™</a>	This comprehensive clinical guide emphasizes practical advice—i.e., specific recommendations about dosing, titration, and combining medications	\$59.00	2003-09-16
<a href="#">Give Up Smooking (Pocket PC 2000)</a>	A new tool to help you to give up smoking!!	\$5.95	2003-09-16
<a href="#">Give Up Smooking</a>	A new tool to help you to give up smoking!!	\$5.95	2003-09-16
<a href="#">NDH04™ (Nursing2004 Drug Handbook)</a>	Up-to-the-minute information on over 1,000 generic and 3,500 brand-name drugs is just a click away with Nursing2004 Drug Handbook for PDA.	\$44.95	2003-09-15
<a href="#">PktEM™ (Pocket Emergency Medicine)</a>	Pocket Emergency Medicine for PDA gives house staff and medical students instant access to the essential information they need for patient care in the emergency department.	\$39.95	2003-09-15
<a href="#">NHerbal04™</a>	Nursing2004 Herbal Medicine Handbook for PDA provides	\$41.95	2003-09-15

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	instant access to current, reliable information for more than 300 herbal remedies used by patients.		
<a href="#"><u>PocketRx</u></a>	A prescription manager and medical organizer with medication reminders and more	\$24.95	2003-09-03
<a href="#"><u>Medical Chart Plus for PPC 2003 OS</u></a>	All in ONE. This program combines patient database and comprehensive Medical Chart. Generate and print report. No desktop companion needed. Fully customizable. Includes 16 entry forms.	\$59.95	2003-09-03
<a href="#"><u>Drug Calc Pro for PPC 2003</u></a>	4 in ONE. 1. Comprehensive IV calc with Rx, s/e, dosage 2. Major drug formulas for easy calc 3. Abbreviations 4. Conversions	\$14.95	2003-09-03
<a href="#"><u>Handy HealthCare for PPC2003</u></a>	Take care of your health by tracking daily food intake and physical exercises.	\$9.99	2003-09-03
<a href="#"><u>Pocket Guide to Medications (SH3)</u></a>	From the editors of Websters New World(TM) Medical Dictionary: a drug guide to the most popular U.S. medications	\$17.95	2003-08-27
<a href="#"><u>Pocket Guide to Medications (MIPS)</u></a>	From the editors of Websters New World(TM) Medical Dictionary: a drug guide to the most popular U.S. medications	\$17.95	2003-08-27
<a href="#"><u>Handy Health Care</u></a>	Take care of your health by tracking daily food intake and physical exercises.	\$12.99	2003-08-27
<a href="#"><u>Archimedes™ - Free Medical Calculator</u></a>	A must have for every medical professional! An innovative specialty calculator, Archimedes is unlike any other program currently available	freeware	2003-08-27
<a href="#"><u>.911™</u></a>	.911™ - FREE Emergency Responder Resource	freeware	2003-08-23
<a href="#"><u>Health Tracker for PocketPC2003</u></a>	A complete health care tool to keep track the health history of your family.Free Lifetime Updates	\$12.95	2003-08-23
<a href="#"><u>PocketBFL:Body-for-LIFE Companion</u></a>	Never before application on Body-for-LIFE	\$19.99	2003-08-23

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Health Tracker for PocketPc2003</u></a>	A complete health care tool to keep track the health history of your family.Free Lifetime Updates	\$12.95	2003-08-13
<a href="#"><u>PDH10™</u></a>	Alphabetically organized monographs on more than 1,000 generic and 3,000 trade name drugs.	\$49.95	2003-08-13
<a href="#"><u>Pocket Guide to Medications (ARM)</u></a>	From the editors of Websters New World(TM) Medical Dictionary: a drug guide to the most popular U.S. medications	\$17.95	2003-08-13
<a href="#"><u>DietMax for Pocket PC 2003</u></a>	10 Vital Measurements to analyze your Health & Fitness with detailed Specification. Supports both Imperial & Metric forms of Calculation. A complete Health Care & Fitness Package.	\$5.00	2003-08-13
<a href="#"><u>Diabetics Pocket Insulin Manager</u></a>	The most complete diabetes management system for the Pocket PC! Track blood glucose levels, meals (calculate bolus values), basal rates, exercise, comments, and more...	\$34.95	2003-08-06
<a href="#"><u>Bones for Pocket PC</u></a>	Bones uses extensive graphics with pictures of all major bones with processes and common fractures demonstrated.	\$19.99	2003-08-06
<a href="#"><u>GlucoControl</u></a>	GlucoControl is a Free PDA software (Pocket PC), that helps to control the glucose levels in blood, it replaces the classic diabetes notebook.	freeware	2003-08-06
<a href="#"><u>i-Health for PocketPC 2003</u></a>	i-Health is an utility for the pocketpc users to make them fit by calculating their BMI,BFP,Ideal Weight etc.	\$2.00	2003-08-06
<a href="#"><u>Shots 2003</u></a>	Shots 2003 is a quick reference guide to the 2003 Childhood Immunization Schedule, a collaboration of the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP)	Freeware	2003-07-24



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	and the American Academy of Family Physicians (AAF		
<a href="#"><u>NeoFax Pocket PC</u></a>	2003 Edition of Neofax in a Pocket PC Application	\$59.95	2003-07-24
<a href="#"><u>NpFamily™</u></a>	This new text/reference is designed to help nurse practitioner students learn how to effectively manage patients across the life span.	\$59.95	2003-07-23
<a href="#"><u>MGHNeuro™</u></a>	Neurology, neurosurgery, and internal medicine residents and practitioners will find this PDA an essential reference for their day-to-day practice.	\$39.95	2003-07-23
<a href="#"><u>IMonCall™</u></a>	A concise, portable reference that focuses on the evaluation and treatment of over 60 of the most common internal medicine on-call problems.	\$44.95	2003-07-23
<a href="#"><u>5mHerbal™</u></a>	Provides instant access to reliable information on herbs, minerals, vitamins, amino acids, probiotics, enzymes, over-the-counter hormones, and other dietary supplements commonly used by consumers.	\$69.95	2003-07-23
<a href="#"><u>HerbalIx™</u></a>	Allows health professionals to answer consumers questions regarding safety issues concerning possible drug-herb and drug-food interactions.	\$69.95	2003-07-23
<a href="#"><u>CrdBrdRev™</u></a>	This highly focused question-and-answer review is geared specifically to candidates taking the Cardiovascular Boards and the Cardiovascular section of the Internal Medicine Boards.	\$79.95	2003-07-23
<a href="#"><u>Clin-eRx™</u></a>	This quick access guide covers more than 900 of the most commonly used medications.	\$19.95	2003-07-23
<a href="#"><u>AW Dictionary of Sexology Terms</u></a>	Dictionary of Sexology Terms with 693 entries.	\$9.95	2003-07-23
<a href="#"><u>ER Coding and Billing Wizard</u></a>	ER Coding and Billing Wizard (ERCBW) is an important tool and resource for Physicians,	\$39.99	2003-07-23

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	PA's and NP's that work in the Emergency Department.		
<a href="#">Pregnancy Tracker/PocketPC 2002</a>	Helps moms-to-be keep track of their progress during pregnancy.	\$29.95	2003-07-19
<a href="#">U.S. Army body fat % Calculator</a>	Simple tool to calculate Body Fat % according to U.S. Army stds set forth in AR 600-9. Even notifies your Overweight status and amount of Body Fat to reduce. Save and load measurements.	\$4.95	2003-07-19
<a href="#">Paramedics Toolbox for Pocket PC</a>	Award Winning Task Specific Modules for Pre-Hospital Providers.	\$34.99	2003-07-08
<a href="#">2003 World Almanac - Consumer Info</a>	Become an "Instant Reference Expert" on Consumer Info with the 2003 World Almanac - Consumer Info & Health.	\$9.95	2003-07-08
<a href="#">DietMax for PPC2002</a>	10 Vital Measurements to analyze your Health & Fitness with detailed Specification. Supports both Imperial & Metric forms of Calculation. A complete Health Care & Fitness Package.	\$3.40	2003-07-08
<a href="#">DietMax</a>	10 Vital Measurements to analyze your Health & Fitness with detailed Specification. Supports both Imperial & Metric forms of Calculation. A complete Health Care & Fitness Package.	\$3.40	2003-07-08
<a href="#">Doktop</a>	Drugs database, medical news and other useful informations for Polish doctors.	freeware	2003-07-08
<a href="#">Drug Calc Pro</a>	4 in ONE. 1. Comprehensive IV calc with Rx, s/e, dosage 2. Major drug formulas for easy calc 3. Abbreviations 4. Conversions	\$14.95	2003-07-08
<a href="#">Shots 2003</a>	Shots 2003 is a quick reference guide to the 2003 Childhood Immunization Schedule and other immunization schedules.	freeware	2003-07-08
<a href="#">2003 World Almanac -</a>	Become an "Instant Reference	\$9.95	2003-06-17

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Consumer Info</u></a>	Expert" on Consumer Info with the 2003 World Almanac - Consumer Info & Health.		
<a href="#"><u>Paramedics Toolbox for Pocket PC</u></a>	Award Winning Task Specific Modules for Pre-Hospital Providers.	\$34.99	2003-06-17
<a href="#"><u>Immunizations</u></a>	Medical Pocket PC Freeware	freeware	2003-06-16
<a href="#"><u>OB Wheel</u></a>	OB Wheel includes calculators for: gestational age (based on EDC, LMP, and US), Bishop Score, and helps you determine when a patient will reach a goal age	freeware	2003-06-16
<a href="#"><u>DietRef</u></a>	DietRef is a daily weight and calorie tracking program. Plot graphs of your weight and calories over time, and view your weight loss stats. Also includes BMI and caloric calc.	\$9.99	2003-06-13
<a href="#"><u>Health Tracker</u></a>	A complete health care tool to keep track the health history of your family.Free Lifetime Updates	\$9.99	2003-06-04
<a href="#"><u>Health Tracker for PPC2002</u></a>	A complete health care tool to keep track the health history of your family.Free Lifetime Updates	\$9.99	2003-06-04
<a href="#"><u>AJCC-TNM™</u></a>	Brings together all currently available information on staging of cancer	\$69.95	2003-06-02
<a href="#"><u>RN CrashCart for Pocket Pc</u></a>	A Pocket Pc program for Nurses. Drug and IV calculations of all kinds, EKGs, Assessments, English to Spanish medical terms, and Conversions.	\$20.00	2003-05-21
<a href="#"><u>IV DripCalc</u></a>	IV Drip Calculations for Nurses. Also checks an ongoing Drip to see if the pt. is getting the right dose.Other Tools include....	\$10.00	2003-05-21
<a href="#"><u>GlucoControl</u></a>	GlucoControl is a Free PDA software (Pocket PC), that helps to control the glucose levels in blood, it replaces the classic diabetes	freeware	2003-05-21

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	notebook.http://glucocontrol.undersociety.com/eng/		
<a href="#">Student tcmDiag</a>	Complete Traditional Chinese Medical (TCM) Zang-Fu Pattern diagnosis reference. Includes Acupuncture, Formula, Western, Etiology, etc. sections	\$24.99	2003-05-21
<a href="#">BioChem 1stRespondER</a>	BioChem 1stRespondER is designed to help healthcare professionals deal with chemical and biological warfare attacks. Lists first aid, ER care, lab tests, etc.	\$18.95	2003-05-21
<a href="#">WMD SWAG</a>	WMD SWAG quickly analyzes your observations at a disaster site and provides a fast, scientific guess of which agents of mass destruction are most likely involved.	\$24.95	2003-05-21
<a href="#">OmniMD.com</a>	OmniMD is a Pocket PC based and Internet enabled Electronic Medical Record System (EMRS), Medical Transcription, Document Management, Charge Capture and Scheduling solution. The system is HIPAA compliant and wireless capable. OmniMD reduces paperwork	negotiable	2003-05-08
<a href="#">Medical Approaches</a>	Free medical textbook	Freeware	2003-05-08
<a href="#">Medical Chart Plus</a>	This program combines patient database and comprehensive medical chart. You're able generated and print report in a matter of seconds. Fully customizable. Includes 16 entry forms.	\$59.95	2003-05-06
<a href="#">Glucopad</a>	THE INTELLIGENT DIABETES MANAGMENT SYSTEM - Remember we are "Built By Diabetics For Diabetics"	\$19.99	2003-05-06
<a href="#">tcmDiag</a>	Complete Traditional Chinese Medical (TCM) Zang-Fu Pattern diagnosis reference. Includes	\$54.99	2003-04-15

Name	Description	Cost	Date Added
	Acupuncture, Formula, Western, Etiology, etc. sections		
<a href="#">Surgical knots,sutures &amp; stitches notes</a>	Everything you need to know on closing wounds. Information on wounds, sutures, needles and knots. Includes over 20 pictures illustrating the different types of sutures/needles/knots/techniques .	\$10.00	2003-04-09
<a href="#">Orthopedic surgery notes</a>	Information on the diagnostic and the pathophysiology of a wide array of conditions related to the musculo-skeletal system. It also covers surgical techniques and approaches of orthopedic procedures.	\$20.00	2003-04-09
<a href="#">Infectious diseases notes</a>	A complete reference about infectious diseases, microbiology and antimicrobials in the palm of your hand.	\$39.99	2003-04-09
<a href="#">Terrorism: The Medical Response</a>	A medical reference text.	\$3.99	2003-04-05
<a href="#">MyCarbJournal</a>	Maintain a journal of the carbohydrates you eat in a day. Keep track if you fall into the desired range.	\$9.95	2003-04-02
<a href="#">SOFMH&amp;™</a>	Full of practical emergency information about coping with any kind of medical emergency in less than optimum situations.	\$64.95	2003-04-02
<a href="#">RnNDH™ (Nursing Drug Handbook)</a>	Key drug information is just one click away now that this best-selling drug handbook for nurses is available for PDAs.	\$44.95	2003-04-02
<a href="#">IdentADrug™</a>	Ident-A-Drug gives you quick accurate identification of medications.	\$39.50	2003-04-02
<a href="#">RnIVDrugs™</a>	Crucial details that make safe and effective administration of I.V. drugs possible are now just one tap away!	\$41.95	2003-04-02
<a href="#">SignsSx™</a>	This authoritative handbook helps in recognizing patient signs and symptoms, linking them to their most probable	\$41.95	2003-04-02

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	causes, and putting them in context with associated findings.		
<a href="#">OncoMd™</a>	This practical handbook is an up-to-date guide to all aspects of cancer chemotherapy.	\$69.95	2003-04-02
<a href="#">OncoRn™</a>	This nursing handbook provides a complete overview of the management of patients with cancer.	\$49.95	2003-04-02
<a href="#">E-Run</a>	electronic patient care report for PPC	\$24.99	2003-03-25
<a href="#">Heart</a>	HEART calculates your training heart rate in 5 zones, using 3 methods...AND...it computes your resting heart rate!	\$9.95	2003-03-14
<a href="#">KnowPlaces - Human Body</a>	An interactive guide to Human Body. Now you can find your way around the body!	\$5.00	2003-03-14
<a href="#">NaturalDB™</a>	Natural Medicines Comprehensive Database gives you everything you want to know about herbs, vitamins, minerals and supplements.	\$92.00	2003-02-28
<a href="#">Pocket Shrink [ARM]</a>	Stressed? Need a shrink? Or maybe just someone to talk to? Pocket Shrink is the answer! A fun way to help you relieve stress, analyze your problems, and pass the time.	\$4.95	2003-02-28
<a href="#">e-pill PillPAL Medication Reminder</a>	Medication Reminder and Patient Adherence History Program	\$49.95	2003-02-28
<a href="#">GlucoControl</a>	GlucoControl is a Free PDA software (Pocket PC), that helps to control the glucose levels in blood, it replaces the classic diabetes notebook.	freeware	2003-02-24
<a href="#">EssentialsDx™</a>	From Lange, "nutshell" information on the diagnosis and management of 500 medical disorders, for use on the wards and in the clinic.	\$44.95	2003-02-16
<a href="#">Procedures in Medicine-PC</a>	A medical reference text with detailed step-by-step prodedures.	\$9.99	2003-02-16
<a href="#">GetFit</a>	Track your workouts and watch	\$10.00	2003-02-16

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	your progress.		
<a href="#">Wound &amp; Skin Infections-PC</a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$3.99	2003-02-04
<a href="#">Travel Medicine</a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$3.99	2003-02-04
<a href="#">Camping First Aid for PPC2002</a>	Plan to go for Camping? Be Secure on your Journey! Buy Camping First Aid Today, a essential Kit for every Tourist, Travellers and Adventurers.	\$5.95	2003-02-04
<a href="#">5mPeds3™</a>	This best-selling reference is designed for quick consultation on problems seen in infants, children, and adolescents.	\$69.95	2003-02-04
<a href="#">BMI &amp; Target Heart Rate calculator</a>	BMI & Target Heart Rate Calculator is an application to calculate BMI & Target Heart Rate.	\$1.50	2003-01-23
<a href="#">Health Care</a>	Health Care is tools make easy for you to use check and diagnose your health measurements to reliably assess and improve your health and fitness.	\$3.59	2003-01-23
<a href="#">emHealth Calculator for Pocket PC</a>	A Very useful tool to make sure you are FIT. We have provided CHECK LIST for you to refer and take appropriate action!	\$19.95	2003-01-23
<a href="#">emHealth Calculator for Pocket PC 2002</a>	A Very useful tool to make sure you are FIT. We have provided CHECK LIST for you to refer and take appropriate action!	\$22.95	2003-01-23
<a href="#">Stedmans™</a>	Get quick access to thousands of medical terms, drug names, eponyms, procedures and protocols--all at the touch of your stylus!	\$49.95	2003-01-23
<a href="#">RnHerbal™</a>	Now you can protect your	\$41.95	2003-01-23

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	patients more completely with the first herbal medicine guide exclusively for nurses!		
<a href="#"><u>Acid-Base and Blood Gas Interpreter</u></a>	The Acid-Base and Blood Gas Interpreter is the state-of-the-art application designed to facilitate the evaluation of acid-base, blood gas and electrolyte values.	\$29.99	2003-01-23
<a href="#"><u>PocketIRIS</u></a>	PocketIRIS is a mobile medical visualization and communication software, which enables display and analysis of full-fidelity DICOM images on handheld devices.	\$225.00	2003-01-08
<a href="#"><u>Verulox Medication Reminder</u></a>	Verulox Medication Reminder allows you to create prescription medication schedules on your Pocket PC. Now you do not have to worry about remembering to take your medications.	\$2.95	2003-01-01
<a href="#"><u>WomanCalendar</u></a>	Assistant in biorhythmic and contraception planning. Zodiac and Chinese signs.	\$9.99	2002-12-18
<a href="#"><u>Camping First Aid</u></a>	Plan to go for Camping? Be Secure on your Journey! Buy Camping First Aid Today, a essential Kit for every Tourist & Travellers.	\$4.95	2002-12-18
<a href="#"><u>NelsonABX™</u></a>	The most popular and widely used pocket reference on pediatric antimicrobial therapy.	\$29.95	2002-12-18
<a href="#"><u>GlucoControl</u></a>	GlucoControl es una utilidad para PDA's (Pocket PC), que permite llevar el control de los niveles de glucosa en sangre, substituyendo la clásica libreta de autocontrol del diabético.	freeware	2002-12-06
<a href="#"><u>WashAmb™</u></a>	Designed for practitioners who are dealing with ambulatory care of adult patients.	\$49.95	2002-11-28
<a href="#"><u>Stop Smoking! (ARM)</u></a>	Stop Smoking, a HandHeld based application to quit smoking. Users can quit without the use of drugs, patches or gum and without the symptoms of	\$14.99	2002-11-28



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	depression, withdrawal, and anxiety.		
<a href="#"><u>Metric Diet Calculator for 2002</u></a>	Want to be fit and smart? Want to update your control over the diet and improve your fitness level, then try this.	\$7.95	2002-11-28
<a href="#"><u>Metric Diet Calculator</u></a>	Want to be fit and smart? Want to update your control over the diet and improve your fitness level, then try this.	\$4.95	2002-11-28
<a href="#"><u>Imperial Diet Calculator for 2002</u></a>	Want to be fit and smart? Want to update your control over the diet and improve your fitness level, then try this.	\$7.95	2002-11-27
<a href="#"><u>Imperial Diet Calculator</u></a>	Want to be fit and smart? Want to update your control over the diet and improve your fitness level, then try this.	\$4.95	2002-11-27
<a href="#"><u>Acid-Base and Blood Gas Interpreter</u></a>	The Acid-Base and Blood Gas Interpreter is designed to facilitate the evaluation of acid-base and blood gas values, as well as electrolyte analysis.	\$29.99	2002-11-27
<a href="#"><u>PktMed™</u></a>	A handy summary of key clinical information covering the major topics in the basic areas of internal medicine.	\$37.95	2002-11-27
<a href="#"><u>DRUGology™ (DRUGology Handbook)</u></a>	DRUGology is a source designed for primary care health providers, residents and medical students so that they may have a quick reference to treat a wide variety of conditions.	\$19.95	2002-11-27
<a href="#"><u>Guide to Popular Natural Products</u></a>	A guide to the most popular herbal products.	\$19.95	2002-11-27
<a href="#"><u>AcuPoints (ARM)</u></a>	Acupuncture Software for Professionals & Students. Point location, Clinic Notes section, Treatments, etc.	\$29.99	2002-11-27
<a href="#"><u>RNPpsych™</u></a>	This concise, quick reference handbook will help prepare students and nurses for common psychosocial and psychiatric problems that can coincide with patients' medical problems.	\$40.95	2002-11-15

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>RNDx&amp;Int™</u></a>	This handy pocket guide helps nursing students identify interventions most commonly associated with nursing diagnoses when caring for patients.	\$30.95	2002-11-15
<a href="#"><u>HIVGuide™ (HIV Primary Care Guidelines)</u></a>	Provides practical up-to-date recommendations on the outpatient management of HIV disease.	\$25.00	2002-11-15
<a href="#"><u>I Ching for Pocket PC (ARM)</u></a>	This program helps you finding answers to vital matters by using the ancient Chinese oracle I Ching (Book of Changes).	\$10.00	2002-11-15
<a href="#"><u>Nurse Pro</u></a>	Nursing patient tracking software for PPC.	\$24.99	2002-11-15
<a href="#"><u>PPC Emerg Nurse bundle</u></a>	Bundle of two great applications, PPC Emerg Nurse Reference Guide and Pocket EKG 2002.	\$29.99	2002-11-08
<a href="#"><u>PPC EMS bundle</u></a>	Bundle of two great applications, PPC EMS Field Guide and PPC EKG 2002.	\$29.99	2002-11-08
<a href="#"><u>Pocket PC 2002 PregWheel</u></a>	A very handy due date calculator /PregWheel for Pocket PC 2002 devices.	\$9.99	2002-11-08
<a href="#"><u>Street Drugs for PPC 2002</u></a>	Learn the Dope on Dope with this Street Drug/Slang database.	\$14.99	2002-11-08
<a href="#"><u>Pocket EKG 2002</u></a>	Pocket PC 2002 EKG reference software.	\$19.99	2002-11-08
<a href="#"><u>PPC Emerg Nurse Reference Guide</u></a>	Emerg Nurse Pocket PC reference guide.	\$19.99	2002-11-08
<a href="#"><u>PPC EMS Field Guide</u></a>	EMS Field Reference Guide for Pocket PC 2002	\$14.99	2002-11-08
<a href="#"><u>RNFastFacts™</u></a>	The most sought-after clinical reference information for eight nursing content areas all in one convenient source.	\$28.95	2002-11-08
<a href="#"><u>Pocket Primary Care</u></a>	Pocket Primary Care provides key points on common problems seen in the ambulatory setting.	\$37.95	2002-11-08
<a href="#"><u>RNAssess™</u></a>	A nursing assessment tool for all age groups, with specialized communication techniques for clients of different ages and cultural backgrounds.	\$32.95	2002-11-08

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>DrugIx™</u></a>	Make better prescribing decisions with this drug interaction analyzer containing over 3,000 brand names with generic equivalents.	\$49.95	2002-11-08
<a href="#"><u>BartlettHIV™</u></a>	This comprehensive reference keeps you on top of the latest guidelines for the care of HIV patients.	\$29.95	2002-11-08
<a href="#"><u>ABC's of Interpretive Laboratory Data</u></a>	Covers hundreds of common and uncommon laboratory tests.	\$49.95	2002-11-08
<a href="#"><u>DOCPRINT3 + DOCCALC</u></a>	Medical Note Generator, Printer, and Calculator	\$19.99	2002-11-08
<a href="#"><u>PointCalc (MIPS)</u></a>	Great way to calculate and track your daily diet points!	\$4.95	2002-10-31
<a href="#"><u>PointCalc (SH3)</u></a>	Great way to calculate and track your daily diet points!	\$4.95	2002-10-31
<a href="#"><u>MyDiet PRO for Pocket PC and Windows</u></a>	A proven approach to weight loss! Special Introductory Savings!!!	\$19.95	2002-10-31
<a href="#"><u>stethographics</u></a>	medical software used for heart and lung diagnosis	\$350	2002-10-22
<a href="#"><u>PersonalTrainerPRO for PPC and Windows</u></a>	Your own Personal Trainer!	\$24.95	2002-10-18
<a href="#"><u>PharmD ToolBox</u></a>	PharmD ToolBox is a combination of 11 modules from the Award Winning products ER&ICU ToolBox and PediSuite.	\$58.99	2002-10-18
<a href="#"><u>Handy Sign</u></a>	Signature Capture at anywhere	\$38.00	2002-10-10
<a href="#"><u>Nutrition Journal</u></a>	Crisho Nutrition Journal is a complete diet and activity tracker, with a nutritional and exercise database that helps user to successfully achieve weight and/or health control programs.	\$12.99	2002-10-06
<a href="#"><u>BioBody Personal Trainer Edition</u></a>	New! More flexibility for different exercise programs! Track your food and workout information. Powerful graphs and views.	\$29.99	2002-10-06
<a href="#"><u>Stedman's Concise Medical Dictionary</u></a>	Stedman's Concise Medical Dictionary has earned the respect of demanding instructors and students alike as a medical	\$39.95	2002-10-06

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	reference of both substance and concision for the health professions.		
<a href="#">MobileWoman for Pocket PC</a>	Software bundle for the modern woman	\$34.95	2002-10-06
<a href="#">SpeedyPharm</a>	Prontuario Farmaceutico	\$145.00	2002-10-06
<a href="#">Patient File</a>	Patient management for the busy OB/GYN.	\$29.95	2002-10-06
<a href="#">Washington Manual of Surgery</a>	The Washington Manual of Surgery, 3rd Edition, provides reliable guidelines and algorithms for management of surgical diseases.	\$49.95	2002-10-06
<a href="#">Johns Hopkins Manual of OBGYN</a>	The perfect PDA reference for clinicians who deal with obstetric and gynecologic problems.	\$49.95	2002-10-06
<a href="#">Pocket Book of ID Therapy</a>	Written by noted authority Dr. John Bartlett, this practical reference covers all relevant aspects of antibiotics.	\$29.95	2002-10-06
<a href="#">Fast Facts Orthopaedic Review</a>	This orthopaedics refresher and study tool for the recertification exam is perfect for residents and practitioners.	\$49.95	2002-10-06
<a href="#">BreastSurgeon</a>	A concise, common sense, clinically-oriented approach to breast disease.	freeware	2002-10-06
<a href="#">Glass Lantern CalTrack</a>	Track calories to lose or gain weight. Includes a USDA 6,000 food database!	\$34.95	2002-10-06
<a href="#">Quick Rounds®</a>	Quick Rounds is the ultimate patient rounds tracking program. Keeps your ongoing rounds list with key info for clinical and billing efficiency. A must have for all physicians!	\$19.95	2002-10-06
<a href="#">DicomViewer</a>	Viewer for Dicom, Jpeg and BMP files	19	2002-09-06
<a href="#">Pocket Health Pack for PocketPC2002</a>	Upholding the health reports is simple now. Diabetes, Eyecare, BP & Asthma tracker are under Health Pack to mitigate you from the maintenance of health	33.95	2002-09-06

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	reports.		
<a href="#"><u>PEPID PDC-Portable Drug Companion</u></a>	A complete drug reference includes 1600 drug/herb/OTC monographs plus integrated dosing calculators, toxicology and more.	49.95	2002-08-21
<a href="#"><u>PEPID PDC-PORTABLE DRUG COMPANION</u></a>	A complete drug reference includes 1600 drug,herbals and OTC monographs plus integrated dosing calculators, toxicology and more.	49.95	2002-08-21
<a href="#"><u>PEPID MSC-MEDICAL STUDENT COMPANION</u></a>	PEPID MSC can help ensure your successful completion of each rotation!	89.95	2002-08-21
<a href="#"><u>PEPID EMS-FOR PARAMEDICS AND EMT`S</u></a>	Named one of the 21 'Hot Products 2002' by the Journal of Emergency Medical Services (JEMS).	89.95	2002-08-21
<a href="#"><u>Pocket Medical Encyclopedia (MIPS)</u></a>	Medical Encyclopedia for Pocket PC	49.95	2002-08-21
<a href="#"><u>PEPID EMS-Software for Paramedics/EMT`s</u></a>	Named one of the 21 'Hot Products 2002' by the Journal of Emergency Medical Services (JEMS).	89.95	2002-08-21
<a href="#"><u>PEPID RN-Clinical Nursing Software</u></a>	The only comprehensive nursing software for nurses in every area of expertise!	89.95	2002-08-21
<a href="#"><u>PEPID RN-CLINICAL NURSING SOFTWARE</u></a>	The only comprehensive nursing software for nurses in all areas of expertise!	89.95	2002-08-21
<a href="#"><u>PEPID MD-Software for All Physicians</u></a>	Your complete, clinical consult...includes 1500 presentations, 1500 monographs, integrated dosing calculators and much more!	109.95	2002-08-21
<a href="#"><u>PEPID MD-Software for All Physicians</u></a>	Your complete, clinical consult...includes 1500 presentations, 1500 monographs, integrated dosing calculators and much more!	109.95	2002-08-21
<a href="#"><u>PEPID ED-EMERG.MED PHYSICIAN SOFTWARE</u></a>	Emergency physician decision support tool with 1500 disease and trauma presentations, 1500 drugs/herbs/OTC monographs,integrated	109.95	2002-08-21

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	calculations and much more!		
<a href="#"><u>Pocket Medical Encyclopedia (ARM)</u></a>	Medical Encyclopedia for Pocket PC	49.95	2002-08-21
<a href="#"><u>emHealth Quiz for PocketPC 2002</u></a>	A unique way to test your awareness and knowledge in health related concepts. Get ready for the quiz that's going to test your knowledge to the full.	17.95	2002-08-21
<a href="#"><u>emHealth Quiz</u></a>	A unique way to test your awareness and knowledge in health related concepts. Get ready for the quiz that's going to test your knowledge to the full.	15.95	2002-08-21
<a href="#"><u>PEPID ED-EMERG.MED PHYSICIAN SOFTWARE</u></a>	Emergency physician decision support tool. Includes 1500 disease and trauma presentations, 1500 drugs/herbs/OTC monographs, integrated dosing calculations and much more!	109.95	2002-08-21
<a href="#"><u>Pocket Health Pack</u></a>	Upholding the health reports is simple now. Diabetes, Eyecare, BP & Asthma tracker are under Health Pack to mitigate you from the maintenance of health reports.	31.95	2002-08-21
<a href="#"><u>Clinical Allergy &amp; Immunology-PC</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$8.99	2002-08-19
<a href="#"><u>Clinical Compendium</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions. Many Alternative Medicine topics covered.	\$8.99	2002-08-19
<a href="#"><u>Clinical Pediatrics-PC</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$9.99	2002-08-19
<a href="#"><u>emPatient Info for Pocket PC 2002</u></a>	Finding difficult to keep track of patient details? Doctors, we help	\$43.95	2002-08-19

Name	Description	Cost	Date Added
	u to carry out your noble profession in a more efficient way with ease!		
<a href="#">emPatient Info</a>	Finding difficult to keep track of patient details? Doctors, we help u to carry out your noble profession in a more efficient way with ease!	\$39.95	2002-08-19
<a href="#">Handbook of Fractures</a>	The ideal on the spot reference for residents and practitioners seeking fast facts on fracture management.	\$59.95	2002-08-19
<a href="#">RNDiseases</a>	The handheld version of Diseases and Disorders: A Nursing Therapeutics Manual is a practical reference for all nurses on the go!	\$45.95	2002-08-19
<a href="#">Wills Eye Manual &amp; Drug Guide</a>	Complete opthomology resource including The Wills Eye Manual and The Wills Eye Drug Guide.	\$69.95	2002-08-19
<a href="#">PocketHealthToolsforPocketPC2002</a>	Your family members list may be long, but, maintenance of their health reports is as simple as a click.	\$31.95	2002-08-19
<a href="#">PointCalc (ARM)</a>	Great way to calculate and track your daily diet points!	\$7.95	2002-08-13
<a href="#">MAMA for Pocket PC</a>	Medline Abstracts Mini Archiever is an offline organizer for your Medline abstracts so you can view them anytime and anywhere. It is highly customizable to your preference.	\$49.95	2002-08-13
<a href="#">Diet Manager</a>	Your handheld assistant in healthy nutrition and sports!	\$19.95	2002-08-05
<a href="#">DueDateCalc/PocketPC2002</a>	Due Date (pregnancy)calculator for obstetric use.	9.95	2002-07-26
<a href="#">Clinical Cardiology-PC</a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$9.99	2002-07-18
<a href="#">New Dictionary of Medical Terms</a>	About 5000 terms with clear explanations of technical terminology and technologies used in the Medical field.	freeware	2002-07-18

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>μ-Breath (MIPS)</u></a>	Peak Flow Monitoring for PocketPC	\$9.95	2002-07-18
<a href="#"><u>μ-Breath (ARM)</u></a>	Peak Flow Monitoring for PocketPC	\$9.95	2002-07-18
<a href="#"><u>Hospital Medicine Essentials</u></a>	Your portable decision-support tool for quick answers to more than 210 clinical problems seen in the inpatient setting.	\$49.95	2002-07-18
<a href="#"><u>Evidence Based Critical Care</u></a>	The handheld version of The Handbook of Evidence Based Critical Care Medicine provides access to critical data in therapeutic decision-making.	\$49.95	2002-07-18
<a href="#"><u>Pocket Pediatrics</u></a>	Pocket Pediatrics provides need-to-know clinical information most common to students and residents in a hospital or ambulatory setting.	\$37.95	2002-07-18
<a href="#"><u>EyeCare for PocketPC2002</u></a>	Eyes are everything for us, but do we care to keep a vigil on them continuously? This application is exactly for that !	\$11.95	2002-07-13
<a href="#"><u>Eye Care</u></a>	Eyes are everything for us, but do we care to keep a vigil on them continuously? This application is exactly for that !	\$9.95	2002-07-13
<a href="#"><u>Pocket Fitness</u></a>	Track your workouts and body measurements. Add/delete exercises as needed. Compare workouts to see your results.	\$10.00	2002-07-13
<a href="#"><u>Personal Health &amp; Diet Manager</u></a>	An easy way to track all your health, diet and fitness information. Contains a full-featured diet and exercise manager, nutrition database, medical records, daily journal and more.	\$24.95	2002-07-05
<a href="#"><u>Handy patients-PC</u></a>	Handy patients-PC is the PC version with powerful tools to customize and superimpose patients informations of your PocketPC on scanned documents of your service, then print.	\$28.00	2002-06-30
<a href="#"><u>Psychiatric Drug Therapy</u></a>	PsychD™ is the handheld version of the Handbook of	\$49.95	2002-06-30



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	Psychiatric Drug Therapy, covering each of the major classes of drugs used in current psychiatric practice.		
<a href="#"><u>Clinical Pulmonology-PC</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	\$9.99	2002-06-30
<a href="#"><u>Clinical Medicine Consult-PC</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	59.99	2002-06-20
<a href="#"><u>Clinical Infectious Diseases-PC</u></a>	A medical reference text with detailed work-ups, treatment plans, medicines and differentials for a myriad of medical conditions.	9.99	2002-06-20
<a href="#"><u>CosmoBio Conception Control (ARM)</u></a>	Whith CosmoBio you get a mobile tool for as well conception and contraception. You don't need no chemical contraceptive any more.	10	2002-06-20
<a href="#"><u>Clinical Rheumatology &amp; Pain-PC</u></a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-20
<a href="#"><u>Clinical Hematology-Oncology-PC</u></a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-20
<a href="#"><u>Clinical Psychiatry-PC</u></a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-20
<a href="#"><u>Clinical Gastroenterology-PC</u></a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials,	9.99	2002-06-20

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	work-ups, and detailed treatment plans for a myriad of medical conditions.		
<a href="#">Clinical Orthopedics-PC</a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-17
<a href="#">ICU-Fluids-Electrolytes-Nutrition-PC</a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-17
<a href="#">Dictionary of Medical Terms</a>	More than 1300 terms with clear explanations of technical terminology and technologies used in the Medical field	freeware	2002-06-17
<a href="#">Clinical Neurology-PC</a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	9.99	2002-06-17
<a href="#">Clinical Nephrology-PC</a>	A medical reference text for practicing clinicians to quickly gather diagnostic, differentials, work-ups, and detailed treatment plans for a myriad of medical conditions.	8.99	2002-06-17
<a href="#">The Sages Manual</a>	The handheld version of The Sages Manual is useful to anyone who needs quick access to information in general surgery.	64.95	2002-06-17
<a href="#">Pocket CPT</a>	Your Pocket Procedure Code Manual	12	2002-06-17
<a href="#">Shopping List-Casio BE-300</a>	A shopping list with a difference, Nutrition Guide built in, view or record nutritional information.	\$8.99	2002-06-04
<a href="#">Pocket ICD</a>	Your Pocket Diagnosis Code Manual	\$12.00	2002-06-04
<a href="#">Pocket ICD/CPT</a>	Your Pocket	\$18.00	2002-06-04

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	Diagnosis/Procedure Code Manual		
<a href="#">Free LetterPAL Plus</a>	Empowering software companion for communication assistance by finger tip letter and number selection. PLUS: PC version DeskLetterPAL	freeware	2002-06-04
<a href="#">Pocket Surgery</a>	The handheld version of Pocket Surgery is perfect for those students who need to access information on patient care anytime and anywhere.	\$37.95	2002-06-04
<a href="#">PillPAL</a>	PillPAL is a simple scheduler for one-time or daily recurring medication reminders	\$3.00	2002-05-19
<a href="#">Free PillPAL</a>	Simple scheduler for one-time medication reminders	freeware	2002-05-19
<a href="#">Medical Abbreviations Dictionary (ARM)</a>	The biggest Medical Abbreviations Dictionary to day	\$25.00	2002-05-18
<a href="#">Medical Abbreviations Dictionary (SH3)</a>	The biggest Medical Abbreviations Dictionary to day	\$25.00	2002-05-17
<a href="#">OPUS</a>	Dictation system for the PocketPC	\$179.99	2002-05-08
<a href="#">Evidence-Based Diagnosis</a>	Designed to use in daily practice, Evidence-Based Diagnosis is perfect for all medical practitioners on the go.	\$64.95	2002-05-08
<a href="#">ER Suite for Pocket PC</a>	Award Winning combination of ER&ICU ToolBox and PediSuite. Please review details of individual products, PediSuite and ER&ICU ToolBox.	\$64.99	2002-04-26
<a href="#">MyBody Suite for Pocket PC</a>	L3's MyDiet, MyFitness, NutriData, and HealthCalc. Four great programs at a great price - OVER 40% OFF!	\$29.95	2002-04-26
<a href="#">NeoFax &amp; 5mPeds™</a>	A bundle for Pediatricians! This collection includes 5 Minute Pediatric Consult and NeoFax so that you may keep up to date on information for even your smallest patients.	\$99.95	2002-04-26
<a href="#">μ-Bio</a>	Biorythms	\$4.95	2002-04-17
<a href="#">Handy Medical Aid</a>	Have you ever had an experience of seeing your loved ones get	\$5.50	2002-04-17

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	hurt and you had absolutely no idea on how to go about giving them some First Aid ? Here is the solution ...		
<a href="#">PPC PreOP (SH3)</a>	preoperative evaluation tool used to produce a comprehensive report	\$14.99	2002-04-17
<a href="#">PPC PreOP (MIPS)</a>	preoperative evaluation tool used to produce a comprehensive report	\$14.99	2002-04-17
<a href="#">PPC PreOP (ARM)</a>	preoperative evaluation tool used to produce comprehensive reports	\$14.99	2002-04-17
<a href="#">TNM Staging SH3</a>	TNM Staging for ALL CANCERS at your finger tips	\$14.99	2002-04-13
<a href="#">TNM Staging MIPS</a>	TNM Staging for ALL CANCERS at your finger tips	\$14.99	2002-04-13
<a href="#">TNM Staging ARM</a>	TNM Staging for ALL CANCERS at your finger tips	\$14.99	2002-04-13
<a href="#">LetterPAL Plus</a>	Empowering software companion for communication assistance by finger tip letter and number selection. With sound.	\$20.00	2002-04-13
<a href="#">LetterPAL</a>	Empowering software companion for communication assistance by finger tip letter and number selection. With sound.	\$10.00	2002-04-13
<a href="#">Free LetterPAL</a>	Empowering software companion for communication assistance by finger tip letter and number selection	freeware	2002-04-13
<a href="#">Clinical Anesthesia</a>	The handheld version of the Handbook of Clinical Anesthesia covers all aspects of anesthetic management during the pre-, intra-, and post-operative periods.	\$59.95	2002-04-13
<a href="#">CecilPkt™</a>	The handheld version of Pocket Companion to Cecil Textbook of Medicine puts essential and up-to-date clinical guidance at your instant disposal!	\$59.95	2002-04-13
<a href="#">NutriData for Pocket PC</a>	Six scientific health calculators and wizards	\$9.95	2002-04-13
<a href="#">MyFitness for Pocket PC</a>	Fitness for life! Multiple	\$15.95	2002-04-13

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	strength and aerobic programs, logging, and much more!		
<a href="#"><u>FerriDiseases™</u></a>	The handheld version of the "Diseases and Disorders" section of Ferri's Clinical Advisor contains all the critical information that primary care physicians need to know about medical disorders.	\$59.95	2002-04-02
<a href="#"><u>Plog-ARM</u></a>	Point Logger for People who "Watch thier Weight"!	\$15.00	2002-03-29
<a href="#"><u>Plog-SH3</u></a>	Point Logger For People that "Watch Thier Weight"!	\$15.00	2002-03-29
<a href="#"><u>PocketPoints</u></a>	The easiest way to calculate your diet points!	\$9.95	2002-03-29
<a href="#"><u>BP Tracker</u></a>	Track and graph your blood pressure readings	\$10.99	2002-03-29
<a href="#"><u>The Little Black Book of Primary Care</u></a>	The Little Black Book of Primary Care, 3rd Edition, a reference that is useful for primary care novices and experts alike, is now available on your handheld device!	\$44.95	2002-03-24
<a href="#"><u>Weights</u></a>	Weight Lifting Electronic Journal	\$24.95	2002-03-24
<a href="#"><u>Workout Wizard</u></a>	Workout Wizard allows you to enter all of your workouts into your PDA, broken down by date, exercise, weight, reps and sets. If your exercise is not in our list, you can add yours.	\$10.95	2002-03-16
<a href="#"><u>FPNotebook for the Pocket PC</u></a>	Full text of fpnotebook.com requires TomeRaider (Pocket PC or Windows version only). Compact HTML version is also available. Covers over 3800 topics in 31 specialty areas.	\$25	2002-03-10
<a href="#"><u>HarrietLane™</u></a>	The gold standard reference for pediatricians that represents 50 years of nationwide use for fast and accurate bedside consultation.	49.95	2002-03-10
<a href="#"><u>My Last Cigarette - Extra Strength</u></a>	Didn't quit smoking ? Try again.	\$24.95	2002-03-03
<a href="#"><u>Medical Abbreviations</u></a>	The biggest Medical	\$25.00	2002-03-01

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>Dictionary (ARM)</u></a>	Abbreviations Dictionary to day!		
<a href="#"><u>BioWin CE for Pocket PCs (MIPS)</u></a>	BioWin CE shows your biorythm. (health,Biorythm, rythm, feeling,curves,body,emotion,intellect,physics). Very comfortable to use.	\$5	2002-02-27
<a href="#"><u>HealthEngage Asthma PPC+Desktop Bundle</u></a>	An easy, yet powerful way to manage your asthma. Includes the ability to store peak flow, medication and note information and provides a graphical summary of your data.	\$39.99	2002-02-27
<a href="#"><u>ER&amp;ICU ToolBox (CasE-125/EM-500/EG-800)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-27
<a href="#"><u>ER&amp;ICU ToolBox (Jornada 520/540)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-27
<a href="#"><u>ER&amp;ICU ToolBox (iPAQ/Jor560/CasE-200)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-27
<a href="#"><u>PediSuite (Cassiope E-125/EM-500/EG-800)</u></a>	Award winning, comprehensive Pediatric software. A product no Pediatric Healthcare professional should be without.	\$44.99	2002-02-27
<a href="#"><u>PocketPal Fast-Access</u></a>	Information Access on steroids...	\$17.99	2002-02-24
<a href="#"><u>Medical Dictionary PocketPC (ARM)</u></a>	Compact medical dictionary with over 38,000 terms.	\$19.00	2002-02-24
<a href="#"><u>5-Minute Infectious Diseases Consult™</u></a>	5mID™(The 5-Minute Infectious Diseases Consult) contains an easily digested source of critical information that can be applied instantly in managing infection.	\$89.95	2002-02-22
<a href="#"><u>Primary Care Medicine Recommendations™</u></a>	PCMRec™(Primary Care Medicine Recommendations) is your portable decision-support tool for quick answers to clinical problems seen in the outpatient setting.	\$49.95	2002-02-22
<a href="#"><u>PktOBG™(Pocket</u></a>	PktOBG™(Pocket OB/GYN) is	\$37.95	2002-02-22

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>OB/GYN</u></a>	the source of fast-facts and need-to-know information for obstetrics and gynecology residents.		
<a href="#"><u>BioBody</u></a>	Get the body you have always wanted! Track your food and workouts. Works well with the Body for Life program.	\$13.99	2002-02-22
<a href="#"><u>The 5-Minute Sports Medicine Consult™</u></a>	5mSports™ is your reference for current diagnosis and treatment for on-field and long-term management of sports-related problems.	\$79.95	2002-02-22
<a href="#"><u>My Last Bottle by Mastersoft</u></a>	Reduce your alcohol consumption.	\$14.95	2002-02-22
<a href="#"><u>The 5 Minute Toxicology Consult™</u></a>	5mTox™(The 5 Minute Toxicology Consult) is a true lifesaver in the frenzied world of assessing and treating poisoned patients.	\$89.95	2002-02-22
<a href="#"><u>I Ching for the Pocket PC</u></a>	This program helps you finding answers to vital matters by using the ancient Chinese oracle I Ching (Book of Changes).	\$10.00	2002-02-22
<a href="#"><u>iFacts™ with NEW A2zDrugs™</u></a>	iFacts™ with New A2zDrugs™ are standard for medical practitioners seeking a high quality compact drug reference guide.	\$107.00	2002-02-22
<a href="#"><u>OCM/911?</u></a>	<b>**FREE**</b> OCM/911? (Outlines in Clinical Medicine/Medical Emergencies) is a FREE critical resource with the latest information on bio-terrorist agents.	freeware	2002-02-22
<a href="#"><u>IVmeds™</u></a>	The handheld version of 2002 Intravenous Medications, the #1 IV drug reference for 29 years!	\$49.95	2002-02-22
<a href="#"><u>Sleep Tight (ARM)</u></a>	Use SleepTight themes for 10 minutes a day to relax your mind and body	\$7.00	2002-02-22
<a href="#"><u>Handy patients</u></a>	Handy patients is a new patient tracking application for doctors.	\$68.00	2002-02-22
<a href="#"><u>5mDental™</u></a>	5mDental™ provides ready access to specific information a	\$64.95	2002-02-22

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	dentist requires to improve point of care.		
<a href="#"><u>AnesthesiaDrugs™</u></a>	The handheld version of Soto Omoigui's Anesthesia Drugs Handbook, the complete reference to essential anesthesia medications.	\$64.95	2002-02-22
<a href="#"><u>Doc-U-Scrip Prescription &amp; Note Writer</u></a>	Easy to use new medical software that allows providers to create and print clear, precise prescriptions, patient letters and releases from an IRDA equipped printer in just seconds!	\$169.95	2002-02-22
<a href="#"><u>AstroWin CE - Astrology for PPCs (MIPS)</u></a>	Preview version of astrology app AstroWin. .Calculates radix (natal chart)/draws zodiac w.signs, planets, houses (no aspect in preview).	freeware	2002-02-22
<a href="#"><u>AstroWin CE - Astrology for PPCs (SH3)</u></a>	Preview version of the astrology program AstroWin. Calculates radix (natal chart, house method placidus) and draws zodiac with signs, planets, houses (no aspect in preview).	freeware	2002-02-22
<a href="#"><u>ObGynPocketPro (ARM)</u></a>	ObGynPocketPro includes a multifunctional DueDate Calculator, ICD9/CPT codes, Patient Counseling Images, Gestational Diabetes Mellitus, Teratogen, and Anomalies Risk information	\$19.95	2002-02-22
<a href="#"><u>Stop Calc</u></a>	Calculate how long since your last cigarette and how much you've saved	\$4.99	2002-02-22
<a href="#"><u>ObGynPocketPro (MIPS)</u></a>	ObGynPocketPro includes a multifunctional DueDate Calculator, ICD9/CPT codes, Patient Counseling Images, Gestational Diabetes Mellitus, Teratogen, and Anomalies Risk information	\$19.95	2002-02-22
<a href="#"><u>WU INSurv™</u></a>	The Washington Manual Internship Survival Guide: Provides the basics that every intern must know from day 1 on	\$29.95	2002-02-22



<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	the wards.		
<a href="#"><u>ObGynPocketPro (SH3)</u></a>	ObGynPocketPro includes a multifunctional Due Date Calculator, ICD9/CPT codes, Patient Counseling Images, Gestational Diabetes Mellitus, Teratogen, and Anomalies Risk information	\$19.95	2002-02-22
<a href="#"><u>Pocket Health</u></a>	Calculate your ideal weight, body mass index, daily calories intake, target heart rate and keep track of all your family members health.	\$15.00	2002-02-22
<a href="#"><u>PediSuite (Cassiop E-125/EM-500/EG-800)</u></a>	Award winning, comprehensive Pediatric software. A product no Pediatric Healthcare professional should be without.	\$44.99	2002-02-22
<a href="#"><u>ER&amp;ICU ToolBox (iPAQ/Jor560/CasE-200)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-22
<a href="#"><u>ER&amp;ICU ToolBox (Jornada 520/540)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-22
<a href="#"><u>ER&amp;ICU ToolBox (CasE-125/EM-500/EG-800)</u></a>	Award winning, comprehensive Emergency & ICU software. A product no Critical Care Provider should be without.	\$37.99	2002-02-22
<a href="#"><u>CalorieWatch SH3</u></a>	Calorie Watch is designed to keep a daily watch over your calories.	\$20.00	2002-02-07
<a href="#"><u>CalorieWatch MIPS</u></a>	Calorie Watch is designed to keep a daily watch over your calories.	\$20.00	2002-02-07
<a href="#"><u>PatientLog (PPC,Mips)</u></a>	Patient Log is an application for doctors and medical students.	\$30.00	2002-02-07
<a href="#"><u>PregTracker (WinCE PPC,SH3)</u></a>	PregTracker is the would be mother's little Pregnancy Management System.	\$30.00	2002-02-07
<a href="#"><u>The 2000 Guide to Medical Resources</u></a>	The most comprehensive directory of medical resources for PDAs.	\$4.99	2002-02-07
<a href="#"><u>KeepFit (WinCE PPC,SH3)</u></a>	If fitness is what you are looking for then this is the application.	\$25.00	2002-02-07

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>StudyBuilder Professional Edition 2001</u></a>	Database software for audit, clinical trials, registries and patient management.	\$1,499.00	2002-02-07
<a href="#"><u>CE ON-CALL W/ SYNCHRONIZATION</u></a>	A solution for medical patient tracking, procedure tracking, and keeping a peripheral brain.	\$24.00	2002-02-07
<a href="#"><u>CE ON-CALL W/O SYNCHRONIZATION</u></a>	A solution for medical patient tracking, procedure tracking, and keeping a peripheral brain.	\$15.00	2002-02-07
<a href="#"><u>DueDateCalc/MIPS</u></a>	A Due Date (pregnancy) Calculator for Obstetric use.	\$9.95	2002-02-07
<a href="#"><u>DueDateCalc/SH3</u></a>	A Due Date (pregnancy) Calculator for Obstetric use.	\$9.95	2002-02-07
<a href="#"><u>HandyPalm Fitness</u></a>	Track food intake and exercise activities against targets you set for yourself	\$29.95	2002-02-07
<a href="#"><u>ON-CALL PROFESSIONAL</u></a>	PROFESSIONAL allows health care professionals to track patient data and HCFA billing.	\$33.00	2002-02-07
<a href="#"><u>DueDateCalc/ARM</u></a>	A Due Date (pregnancy) Calculator for Obstetric use.	\$9.95	2002-02-07
<a href="#"><u>BACGraph</u></a>	Blood Alcohol Concentration calculator	\$17.00	2002-02-07
<a href="#"><u>Bio Rhythm 2 for Pocket PC</u></a>	A simple program that draws your Bio Rhythm diagram (All CPUs)	freeware	2002-02-07
<a href="#"><u>Outlines in Clinical Medicine™</u></a>	A comprehensive medical reference containing over 700 separate outlines covering internal medicine.	\$79.95	2002-02-07
<a href="#"><u>PediatricDrugs™</u></a>	A pediatric drug resource that contains a complete database with pediatric-sensitive medications and hundreds of drug monographs.	\$49.95	2002-02-07
<a href="#"><u>5mPeds™(5-Minute Pediatric Consult)</u></a>	5mPeds™ (The 5-Minute Pediatric Consult):(formerly 5MPC) is designed for quick consultation on problems seen in infants, children, and adolescents.	\$64.95	2002-02-07
<a href="#"><u>StudyBuilder Enterprise Edition 2001</u></a>	Database software for audit, clinical trials, registries and patient management via the Internet!	\$4,999.00	2002-02-06

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>StudyBuilder Personal Edition 2001 (CE)</u></a>	Database software for audit, clinical trials, registries and patient management	\$499.00	2002-02-06
<a href="#"><u>StudyBuilder Student Edition 2001 (CE)</u></a>	Database software for audit, clinical trials, registries and patient management for students	\$149.00	2002-02-06
<a href="#"><u>FlashIt</u></a>	Flashcard application for the Pocket PC	\$6.95	2002-02-06
<a href="#"><u>Archimedes</u></a>	The Intelligent Calculator for Medical Professionals.	freeware	2002-02-06
<a href="#"><u>IconSpeak</u></a>	Pocket PC based assistive communications aid for people with impaired speech.	\$205.00	2002-02-06
<a href="#"><u>PortaVie MedicalRecords</u></a>	Tracks family medical records including; doctor, health conditions, immunizations, and medications.	\$29.95	2002-02-06
<a href="#"><u>WeightCalc</u></a>	A calculator to accurately track your weight.	freeware	2002-02-06
<a href="#"><u>DigiSoft reViewMD</u></a>	Use reViewMD to view static & video images including DICOM 3 files anytime, anywhere.	\$149.00	2002-02-06
<a href="#"><u>The Washington Manual™</u></a>	<b>**PRE-ORDER**</b> Wash Med™ (The Washington Manual of Medical Therapeutics, 30th Edition ) is now available for the Palm OS, Windows CE /Pocket PC handheld platforms.	\$59.95	2002-02-05
<a href="#"><u>Clinical Medical Compendium</u></a>	Reference text for medical personnel.	freeware	2002-02-05
<a href="#"><u>5mOrtho™</u></a>	The 5-Minute Orthopaedic Consult is now available for the Palm OS & Windows CE/Pocket PC handheld platforms.	\$79.95	2002-02-05
<a href="#"><u>5mCardiac™</u></a>	5mCardiac™(The AHA Clinical Cardiac Consult) now available for the Palm OS, Windows CE/Pocket PC handheld platforms.	\$79.95	2002-02-05
<a href="#"><u>Fluid Wizard Jornada 520/540 Series</u></a>	Fluid infusion calculation software for the health professional.	\$7.99	2002-02-05
<a href="#"><u>Fluid Wizard iPAQ/Jornada 560 Series</u></a>	Fluid infusion calculation software for the health professional.	\$7.99	2002-02-05

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>iFacts - Drug Interaction Facts</u></a>	Contains more than 700 detailed monographs covering 3,500 brand and generic drugs and 70 plus therapeutic classes.	\$69.95	2002-02-05
<a href="#"><u>Clinical Dermatology</u></a>	Reference text for medical personnel	freeware	2002-02-05
<a href="#"><u>Clinical Trauma &amp; Toxicology</u></a>	Reference text for medical personnel	freeware	2002-02-05
<a href="#"><u>Clinical Neurology</u></a>	Reference text for medical personnel	freeware	2002-02-05
<a href="#"><u>PediSuite (Jornada 520/540 Series)</u></a>	Award winning, comprehensive Pediatric software. The first program that can replace your Harriet-Lane Guide.	\$39.99	2002-02-05
<a href="#"><u>PediSuite (iPAQ/Jornada 560 Series)</u></a>	Award winning, comprehensive Pediatric software. The first program that can replace your Harriet-Lane Guide.	\$39.99	2002-02-05
<a href="#"><u>OCM-Internal Medicine™</u></a>	OCM is truly an ideal resource for practicing internists, allied medical professionals, medical consultants, private practitioners, and other healthcare organizations.	\$69.95	2002-02-05
<a href="#"><u>OCM-Family Practice Edition™</u></a>	OCM is truly an ideal resource for practicing physicians, allied medical professionals, medical consultants, biotechnology and pharmaceutical companies, hospitals, and other health.	\$69.95	2002-02-05
<a href="#"><u>5 Minute Clinical Consult™ 2002 Edition</u></a>	5MCC 2002™ is the latest edition of this comprehensive medical reference, now available in the extremely popular Skyscape format for Palm®, and WindowsCE®/PocketPC.	\$64.95	2002-02-05
<a href="#"><u>ToxWizard (Jornada 520/540)</u></a>	Medical Toxicology Software that no health professional should be without!	\$19.99	2002-02-05
<a href="#"><u>ToxWizard (iPAQ/Jornada 560 Series)</u></a>	Medical Toxicology Software that no health professional should be without!	\$19.99	2002-02-05
<a href="#"><u>topsE&amp;M Coder</u></a>	Increase income and HCFA compliance with this E&M code calculator. Works for any E&M	\$49.95	2002-02-05

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	category.		
<a href="#"><u>Drip Calc (Jornada 520/540)</u></a>	Award winning Emergency and Critical Care Medication Calculator, Now Available for PPC	\$24.99	2002-02-05
<a href="#"><u>Drip Calc for iPAQ &amp; Jornada 560 Series</u></a>	Award winning Emergency and Critical Care Medication Calculator, Now Available for PPC	\$24.99	2002-02-05
<a href="#"><u>Noteworthy Clinical Companion – IM</u></a>	A patient tracking, procedure and case log productivity tool. This internal medicine version includes additional labs, patient education and drawing tools designed specifically for internists.	\$89.95	2002-02-05
<a href="#"><u>Noteworthy Clinical Companion Cardio</u></a>	A patient tracking, procedure and case log productivity tool. This cardiology version includes additional labs, patient education and drawing tools designed for cardiologists.	\$89.95	2002-02-05
<a href="#"><u>5-Minute Emergency Medicine Consult™</u></a>	5mEmerg™(formerly 5MEC) is a quick guide for practicing emergency medicine clinicians to turn to for immediate information that is accurate, pointed and readily encompassing.	\$64.95	2002-02-05
<a href="#"><u>HarrietLane™</u></a>	**PRE-ORDER**HarrietLane™ (The Harriet Lane Handbook, John Hopkins Hospital, Fifteenth Edition) now available for the Palm OS®, Windows CE® /Pocket PC handheld platforms.	\$49.95	2002-02-05
<a href="#"><u>FerriGuide™</u></a>	FerriGuide™ (Ferri's Practical Guide to the Care of the Medical Patient, 5th Edition) now available for the Palm OS, Windows CE /Pocket PC handheld platforms.	\$49.95	2002-02-05
<a href="#"><u>Noteworthy Clinical Companion</u></a>	A patient tracking, procedure and case log productivity tool -- designed for clinicians by	\$69.95	2002-02-05

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	clinicians – ideal for residents, attendings, medical students, and private practitioners while on rounds.		
<a href="#"><u>TNM Staging PC</u></a>	TNM Staging for ALL cancers at your fingertips.	\$15.00	2002-02-05
<a href="#"><u>iFacts™, DrDrugs™, &amp; 5mEmerg™</u></a>	Skyscape smARTpak™ for emergency medicine with over 600 clinical topics. smARTlink™ integrates disease & drug book with unique analyzer for accessing drug interactions	\$164.95	2002-02-05
<a href="#"><u>iFacts™, DrDrugs™ &amp; 5MCC™</u></a>	Skyscape smARTpak™ with over 4500 brand & generic drugs, 1000 clinical topics, 7500 terms & medications. smARTlink integrates disease & drug book with unique interaction analyzer.	\$164.95	2002-02-05
<a href="#"><u>iFacts™ with DrugGuide™</u></a>	Skyscape smARTpak for nurses includes 5000 trade and generic drugs with 1000 drug monographs. smARTlink™ integrates drug book, with unique analyzer for multiple interactions.	\$107.00	2002-02-05
<a href="#"><u>iFacts™ with DrDrugs™</u></a>	Contains over 1,000 detailed monographs covering 4,500 brand and generic drugs, 130 drug classifications and interactions with over 2,700 drugs.	\$107.00	2002-02-05
<a href="#"><u>iFacts™ with BONUS A2zDrugs™</u></a>	Contains more than 700 detailed monographs covering 3,500 brand and generic drugs and 70 plus therapeutic classes.	\$69.95	2002-02-05
<a href="#"><u>DrugGuide™</u></a>	Includes over 5000 trade and generic drugs, nearly 140 drug classifications and 700 commonly used combination drugs	\$49.95	2002-02-05
<a href="#"><u>DrDrugs™</u></a>	Includes over 4500 trade and generic drugs, nearly 130 drug classifications, 1000 drug	\$49.95	2002-02-05

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
	monographs and 475 commonly used combination drugs.		
<a href="#">InfoRetriever</a>	just-in-time” information focusing on POEMs: “Patient-Oriented Evidence that Matters.”	\$275	2002-01-20
<a href="#">PediSuite</a>	Award winning, comprehensive Pediatric software. The first program that can replace your Harriet-Lane Guide.	\$39.99	2001-12-04
<a href="#">Recall Series</a>	Recall Series for your PDA	>= \$29.00	2001-11-19
<a href="#">EMERGENCY!</a>	Be Prepared! Vital information in the fastest way possible. Let your Pocket PC help when you need it most!	\$5	2001-10-28
<a href="#">Medical Center</a>	The best software for Medicals centers	\$295.95	2001-09-16
<a href="#">PocketHealth</a>	A personal health database in the palm of your hand!	\$9.95	2001-09-08
<a href="#">WeightCalc</a>	A calculator to accurately track your weight.	freeware	2001-09-08
<a href="#">PocketLibrary</a>	Allscripts TouchWorks Pocket Library Series Titles - 5 clinical trials (30 days free) and 1 freeware (PocketAnatomy) downloads from Allscripts Healthcare Solutions, the leader in HCIT Clinical Handheld Technology	varies by module . Free to \$54.95	2001-09-07
<a href="#">TalkNotes Portable</a>	very accurate voice recognition for medical documentation	varies	2001-08-27
<a href="#">www.healthengage.com</a>	Software for chronic illness patients and doctors (the first release is for asthma) to chart, monitor and track vital health information	\$29.99 on sale/free trial downlo	2001-07-31
<a href="#">Digital Doc</a>	Universal SOAP format works for all professions, all specialties: Quickly create comprehensive documentation on the go. With a few selective taps, your rapidly captured patient data is turned into narrative style charts, soaps and reports.	\$295	2001-07-14

<b>Name</b>	<b>Description</b>	<b>Cost</b>	<b>Date Added</b>
<a href="#"><u>PEPID</u></a>	Portable Emergency and Primary Care Information Database. Over 1500 medical presentations, drug and herbal remedies section, complete ED and organ-systems sections.	\$39.95 for 6-month subscription	2001-06-26
<a href="#"><u>reViewMD</u></a>	a DICOM image viewer, supports many other image file formats including, MPEG-1 and MPEG-2 video, BMP, 2BP, JPG, JPE, JPEG, GIF, PCX, PCD, TIF, TIFF	\$149	2001-05-22
<a href="#"><u>Pocket Anatomy</u></a>	a unique atlas of normal anatomy, selected procedures, and disease states	freeware	2001-05-09
<a href="#"><u>Drugguide</u></a>	special version of the Lexi-Comp Drug Information Handbook, optimized for Pocket PC devices and the TouchWorks Pocket Library reader.	\$39.95	2001-05-09
<a href="#"><u>Pediatric Drugguide</u></a>	this title provides all the information necessary for pediatric dosing and proper use of medications for children and infants	\$39.95	2001-05-09
<a href="#"><u>Geriatric Drugguide</u></a>	Based on the Geriatric Dosage Handbook published by Lexi-Comp, this title provides all the information necessary for geriatric dosing and proper use of medications for older adults.	\$39.95	2001-05-09
<a href="#"><u>Chili</u></a>	a teleradiology system running on the iPAQ	<=\$1500	2001-04-30
<a href="#"><u>Mobile MedData Personal</u></a>	software for Chiropractors.	\$129	2001-04-22
<a href="#"><u>PocketChart</u></a>	PocketChart puts point-of-care functionality and a self-contained electronic medical record in the palm of your hand.	\$2499 inc iPAQ	2001-03-26
<a href="#"><u>Cairo®</u></a>	provides documentation management for the chiropractic profession	\$1995	2001-03-23
<a href="#"><u>CE On-Call</u></a>	tracking patient information	\$20	2001-01-03
<a href="#"><u>MedCenter PocketPC</u></a>	medical billing and patient record software	??	2000-12-06
<a href="#"><u>Handheldmed Reader</u></a>	Handheldmed Book reader	freeware	2000-10-06



Name	Description	Cost	Date Added
		e	
<a href="#">Archimedes</a>	Innovative specialty calculator for the medical professional	freeware	2000-10-02
<a href="#">5 Minute Clinical Consult</a>	very comprehensive and structured clinical resource	\$64.95	2000-09-27
<a href="#">LexiDrugs</a>	Complete database of more than 1500 drugs	\$64.95	2000-09-27
<a href="#">PediatricDrugs</a>	complete database of more than 3,400 paediatric-sensitive medications and 640 drug monographs.	\$64.95	2000-09-27
<a href="#">GeriatricDrugs</a>	complete database of more than 2,440 geriatric-sensitive medications and 770 drug monographs	\$64.95	2000-09-27
<a href="#">CardioDrugs</a>	cardiology-related drug information containing 374 generic drug monographs.	\$64.95	2000-09-27
<a href="#">IDBook</a>	over 166 infectious disease syndromes, 245 key tests and procedures, 322 antimicrobial agents and info on 152 infectious disease organisms.	\$64.95	2000-09-27
<a href="#">AnCCDrugs</a>	anaesthesiology and critical care drug information resource	\$64.95	2000-09-27
<a href="#">PsychiatricDrugs</a>	psychiatric drug resource that covers over 4,000 brand names and contains over 1,063 generic drug monographs.	\$64.95	2000-09-27
<a href="#">DentalDrugs</a>	covers over 5,000 drugs commonly prescribed, by dentists	\$64.95	2000-09-27
<a href="#">Outlines in Clinical Medicine</a>	comprehensive medical reference containing over 700 separate outlines	\$64.95	2000-09-27
<a href="#">First Aid</a>	quick reference guide to step-by-step guidelines for emergency first aid	£5 (\$8)	2000-09-12

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## APPENDIX D. KHAO LAK HOTELS STATUS IN MAY 2005

	Closed until further notice
	Some damage but hotel is still open
	No damage, operating normally
	No report

Hotel Name	Destination	Damage
<a href="#">Anantara Royal Coco Palm</a>	Khao Lak	Closed until further notice
Andaburi Resort Khao Lak	Khao Lak	Operating normally
Andaman Princess Resort	Khao Lak	Closed until further notice
Andamania Beach Resort	Khao Lak	Closed until further notice
<a href="#">Baan Khaolak Resort</a>	Khao Lak	Closed until further notice
Baan Krating Khao Lak	Khao Lak	Operating normally
Bangsak Beach Resort	Khao Lak	Closed until further notice
Blue Village Pakarang Resort Khao Lak	Khao Lak	Closed until further notice
<a href="#">Briza Beach Resort &amp; Spa</a>	Khao Lak	Closed until further notice
Emerald Resort & Spa	Khao Lak	Closed until further notice
<a href="#">Haadson Resort</a>	Khao Lak	Closed until further notice
Hot Spring Beach Resort and Spa	Khao Lak	Closed until further notice
<a href="#">Khao Lak Bay Front Resort</a>	Khao Lak	Closed until further notice
Khao Lak Bhandari	Khao Lak	Closed until further notice
Khao Lak Long Beach Resort & Spa	Khao Lak	Closed until further notice
<a href="#">Khao Lak Merlin</a>	Khao Lak	Closed until further notice
Khao Lak Palm Beach Resort	Khao Lak	Closed until further notice
Khao Lak Paradise Resort	Khao Lak	Closed until further notice
<a href="#">Khao Lak Resort</a>	Khao Lak	Some damage but still operating
Khao Lak Seaview Resort & Spa	Khao Lak	Closed until further notice
<a href="#">Khao Lak Sunset Resort</a>	Khao Lak	Closed until further notice
<a href="#">Khao Lak Wanaburee Resort</a>	Khao Lak	Closed until further notice
<a href="#">Khao Sok Riverside Lodge</a>	Khao Lak	Operating normally
<a href="#">Khaolak Laguna Resort</a>	Khao Lak	Closed until further notice
Khaolak Orchid Beach Resort	Khao Lak	Closed until further notice
Khaolak Orchid Resortel	Khao Lak	Closed until further notice
Koh Khao Resort	Khao Lak	Closed until further notice
<a href="#">Koh Yao Island Resort</a>	Khao Lak	Closed until further notice
Krathom Moken Beach Resort	Khao Lak	Closed until further notice
<a href="#">Kuraburi Greenview Resort</a>	Khao Lak	Closed until further notice
<a href="#">La Flora</a>	Khao Lak	Closed until further notice

<a href="#">Le Meridien Khao Lak</a>	Khao Lak	Closed until further notice
<a href="#">Mukdara</a>	Khao Lak	Closed until further notice
<a href="#">Pakarang Resort</a>	Khao Lak	Closed until further notice
Palm Andaman Beach Resort	Khao Lak	Closed until further notice
Palm Beach Resort	Khao Lak	Closed until further notice
Paradise Koh Yao Resort	Khao Lak	Operating normally
Seaview Resort and Spa	Khao Lak	Closed until further notice
<a href="#">Similana Resort</a>	Khao Lak	Closed until further notice
Sofitel Magic Lagoon Resort and Spa	Khao Lak	Closed until further notice
Southsea Pakarang Resort and Spa	Khao Lak	Closed until further notice
Sunset Resort	Khao Lak	Closed until further notice

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